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Next issue on sale 9th February 1995

Alternative input

IN the first issue of 1995 we have a five page in-depth study of the alternative ways of putting data into your Acorn machine, or controlling what is already there. In addition there is a feature on the education show of the year – BETT – and a glimpse at what some of the education software houses have been working towards over the last few months.

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REGULARS

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This month Steve Turnbull steps aside to let one of our regular contributors vent his spleen

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The latest hints, tips and interviews from Hal. Plus developments in the Acorn games world

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How is Acorn holding its own against the PC targeting of the education market? We assess the new software

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BBC disk 77
Fulls details on the subscription disk for the 8-bit BBC Micro and how to use it

Most of the editorial and adverts in this magazine were produced with ArtWorks and Impression from Computer Concepts.

THE MEGADISK

Britain's best Acorn cover disk contains hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop.

Full details about the package MegaDisk – see Page 6.

- **Acturus**
  Spinning adventure in a texture-mapped world – take the gyroscope for a spin
- **MathsGen**
  Create your own maths worksheets in a matter of seconds
- **Calendar**
  Create any calendar you want for the years 1900 to 2247
- **Celebration**
  Your own event diary with 546 events which will remind you beforehand
- **Databay**
  Cheats for Crystal Maze, Lemmings 2 Tribes, Magic Pockets and Magnetoids PLUS the Exile solution
- **Techforum**
  Programs offering aid and succour: Thumbnails, TskAlrmBug
- **Hensa**
  For comms enthusiasts the facilities available to you via Hensa
- **Building**
  Are your responses quick enough for electronic tug-of-war?

Subscribe now! – See page 68

SUBSCRIBE to *Acorn Computing* and you'll get an amazing value-for-money deal that beats all our rivals: Not only do you get a whole year's-worth of issues you get TWO disks every month plus unbeatable software – free!

See Page 68 for details of this unbelievable offer.

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The MegaDisk

What's on this month?

- Arcturus
- Calendar
- Celebration
- MathsGen
- Programs from the magazine

Arcturus: Skill and strategy

FOUR levels of controlling a swirling gyroscope is your challenge this month, courtesy of Thomas Alber and Oregan Software (0121 353 6044). The mission is simple – collect all the diamonds on a curious sky-bound world. Don't fall off and don't run into any nasties. You have no fire power, so use your wits and the single-minded programming of the machine nasties to defeat them and survive for another level.

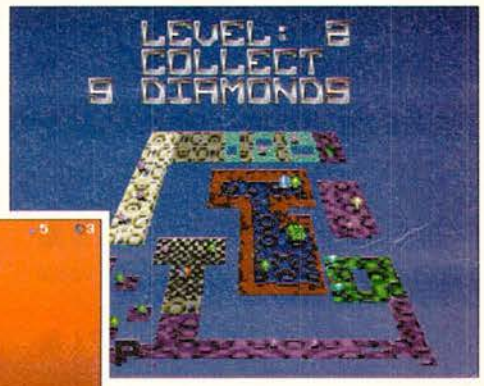
Multi-coloured squares allow you to jump over chasms while the grey ones act as teleports. The landscape moves with and around you which can help and hinder. The sea and laver boil so stay out of both, though you can afford to get your feet wet – just keep moving.

Keys

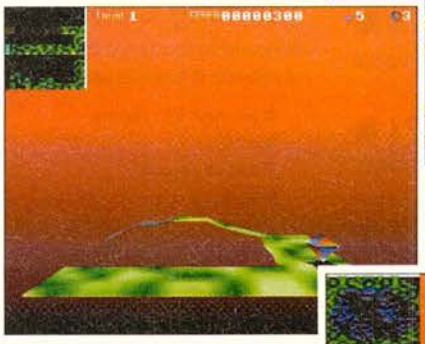
Control+F1	Switch map off
Control+F2	Map zoom level 1
Control+F3	Map zoom level 2
Control+F4	Pause (press fire to resume)
Escape	Restart level
Control+Esc	Back to main menu

By default the arrow keys work the gyroscope but you can change these if you prefer. This version only has four levels and if you get too frustrated you can watch a saved movie of the these and find out just how simple it is – once you know how of course.

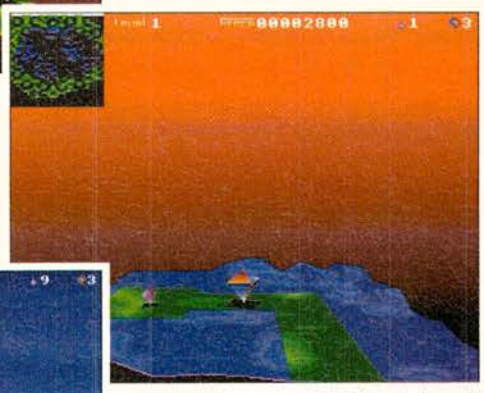
The full version of Arcturus costs £24.95 and has 104 levels, with music and effects as you traverse the shaded and texture-mapped world. The MegaDisk version runs on a 1Mb machine, but the full version does require 2Mb and RISC OS 3 – it runs on the Risc PC too.



● *The task before you*



● *Keep your head*



● *Gems abound – collect them all*

● *Careful now*

Calendar: Make your own 'til 2247

THIS useful program from Michael Rozdoba means you can create any calendar you want for the years 1900 to 2247.

You can create and export the calendar using the standard save box icons on the right side of the window. Either enter a filepath and click on OK, or drag the draw file icon to a Filer window or suitable application. Calendar will also let you straddle a year end, so you can generate calendars for academic or financial years.

If you are printing on A4 paper you'll find you can generate a full size 12-month calendar split over four sides of A4, by creating four separate calendar draw files each covering three months.

Apology

For those of you expecting another instalment of the 3D vector articles and programs it has, unfortunately, been delayed. It will be continued from the February issue.

Celebration: Good times are here

ALSO known as Birthday Book II, this program comes from Simon Weaver. Celebration is a fully RISC OS compliant *event* diary which can hold up to 546 events, each with a unique number of days to warn you of it before it happens.

The event book itself is very simple to use. To open it, click Select on the iconbar icon. Displayed at the top is the name of the month. This could also display *Warnings*. By clicking on the month, or the arrow beside it, you can change the month currently displayed.

When the program is loaded the first time there are no events in it. You can start by adding your own birthday. Click on the New Event icon and a window will appear. Type in your name, then press Return and type in the date you were born. Click on the month and Select the correct month you were born in. Click where it says Ignore age/Years and type in the year you were born. You can now click on Last at the bottom and it will be registered.

If you wanted to add another event you should click on Another and if you wanted to be warned earlier than seven days about your birthday, you can change the warning days number. The main purpose of this is so you can be warned further in advance for relatives living on the other side of the world. This warning can be between 0 and 99 days before the event. Leap years, lengths of months and so on are correctly observed.

If it is a wedding anniversary you can click on Wedding Anniversary or for another type of event click on Other and type in a five letter descriptor. A one-off event will delete itself as soon as you accept the warning for it.

Click on the month of your birthday at the top of the book window and your birthday will appear. If it is within the X days warning date, it will appear red – otherwise black, or green if it is a one off event. If you click any button on your birthday a menu will appear giving different options – most of these are self-explanatory. Normally the Accept Warning will be greyed out, except when the event is in red. Remember though, when you accept a warning you will not be reminded again until the next year, so it is best to only click on Accept Warning when you are sure you won't forget.

There is a search option too where all punctuation is ignored. When you click on Find or press Return, the first matching record is shown and the corresponding month opened. Full information and a tutorial are available on the MegaDisk.

FAULTY DISK?

If your cover disk or 32-bit subscription disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

PC Wise Ltd
Dowlais Top
Business Park
Dowlais
Merthyr Tydfil
Mid Glamorgan
CF48 2YY

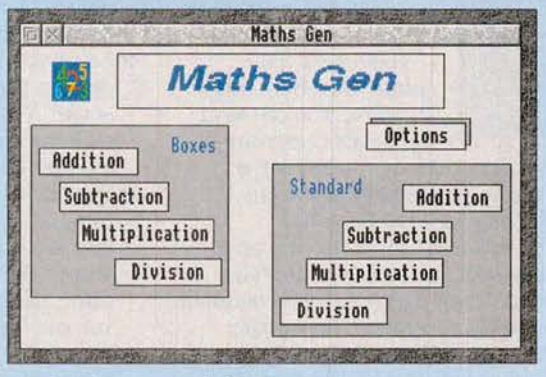
If there seems to be a fault with one of the programs please contact the magazine by post describing your machine set- up and exactly what happens when you run the program.

MathsGen: Questions and answers

THIS Maths Worksheet Generator comes from Creative Curriculum Software (01422 340524) and at the moment retails at a specially reduced price of £9.95. This package allows you to create Maths sheets for school or home to test addition, subtraction, multiplication and division.

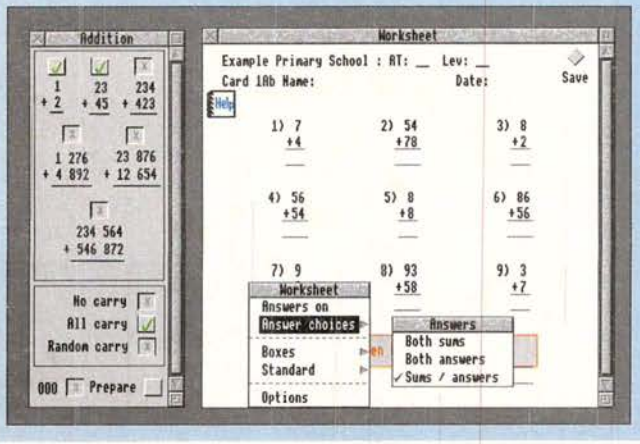
You can create a variety of sums and save them with or without answers as a draw file which can then be printed in the normal way or incorporated into another document.

For instance, if you want to set 10 additions you can choose between standard or boxed versions. Boxed is where an element is missing and you can choose between 1 and 3 elements, as well as using *+, plus, and* and *add*. Standard addition allows you to add columns in various forms. The same basis is used for the other functions too.



When the appropriate Worksheet has been generated, click save and two Worksheets will be saved, side by side, in Draw format. Both will be sums, answers or one of each – determined by the Answer choice selection from the Worksheet menu. These can be found in the !Saved directory. On the MegaDisk version of MathsGen, you can only access the save option with addition worksheets.

Interactive help is supported and there is a ReadMe file on the disk to give you a quick rundown of the operations, but you'll find that MathsGen is very intuitive to use.



● *Standard addition*

Programsfrom the magazine

● Databay	Cheats for Crystal Maze, Lemmings 2 Tribes, Magic Pockets and Magnetoids PLUS the full Exile solution
● Techforum	Programs offering aid and succour: Thumbnails, TskAlrmBug
● Comms	Hensa directory
● Body Building	Are your responses quick enough for electronic tug-of-war?

The 32-Bit Subscription Disk

What's on this month?

- MusicBox
- RoboCatch
- PD software

MusicBox: Now everyone can be musical

BUILT-IN COMPETITION

EDUCATION specialist Topologika (01326 377771) has put together a special version of its musical composition package – MusicBox.

The only restrictions you have preventing this from being the full version is that the program only runs during the first four months of 1995 and you can only run it for 15 minutes at a time, but you can load MusicBox as many times as you want. Finally, you cannot print and you can only save from *TuneBox*.

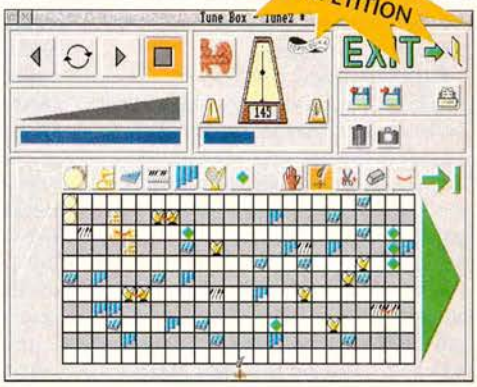
You should unarchive this program if you want to save your work and if you have a 1Mb machine you must decompress this on to a separate floppy or hard disk. When it comes to running the program on a 1Mb machine, make sure there are no other applications running and that the Font Cache and System Sprite areas are set to 0k.

If you don't subscribe to *Acorn Computing* and would like a copy of MusicBox, then send a formatted disk and SAE to: *MusicBoxDemo, Acorn Computing, Media House, Adlington Park, Macclesfield SK10 4NP.*

Topologika has a competition built into TuneBox. You can send up to four compositions from one address – individual or family. All you have to send to Topologika is the file called !MusicBoxD.1 for each entry on a disk – you can rename this if you want. These disks cannot be returned. Send your entries to: Topologika Software, Islington Wharf, Penrhn, Cornwall TR10 8AT. The best 10 tunes will win a copy of MusicBox with 10 runners-up each receiving a £25 voucher redeemable against any Topologika product.

What is more, Topologika is offering MusicBox to *Acorn Computing* readers at a special price – £37.75 instead of £43.63 inc VAT – postage plus £2.50.

Music Box is targeted at children throughout the primary age range. The aim of Music Box is to provide a safe playing environment for musicians, with and without technical skills, to explore some aspects of music that might be difficult on traditional instruments. This is done in four different ways.



- Sound Box – This is a very simple play area. Sounds are represented by buttons on the screen: just point at the buttons, click the mouse and you hear the sound. The buttons are arranged vertically in terms of pitch and horizontally in terms of the kind of sound they make. Sound Box is an *instrument* to be played and children can record their tunes and play them back, in either direction.
- Chord Box – Here, children can explore the way notes combine to make chords. Notes are switched on or off. Several chords can be created at once and recorded to be used as an accompaniment for *real* instruments.
- Beat Box – Where children can develop percussion patterns of any length. These can be 'constructed' with the mouse or it can be used as a simple drum machine.
- Tune Box – Lets you put sounds on to a grid in very much the same way as you might write musical script – the grid representing a stave. The grid is then played so you can hear the composition they have created. This can be set to play continuously as it is developed. Very simple editing tools are provided and tunes can be saved.

All four activities have controls in common and various instruments to choose from, with a maximum of seven on the screen at any time. If applicable, the instrument in use will be highlighted, as in the above example. However, you can select which seven to display from all the instruments in the !MBInsts application.

Simply point at any of the buttons on the Instrument iconbar and click Menu. This will bring up a menu of all the voices available in the current !MBInsts application. It will also show you the icons that are attached to those voices. Click on the voice you want and it will load and sound. If you want to replace the current instrument with this new one click on Yes; if not, click No. If you have used the instrument you are replacing in a tune, chord or rhythm, all occurrences of that instrument will be replaced with the new one.

Robocatch: Space is invaded again

NOW the rules to this game are simple – shoot the orbs, collect the bonuses and avoid the bombs. If you suceed you can progress on to the next level. The question is how high is your hiscore?

Keys

Z	Move Left
X	Move Right
Return	Fire
Escape	Return To Desktop

The full game has nine levels and is the latest in Generation Design's (01258 452507) budget series costing just £7.99.

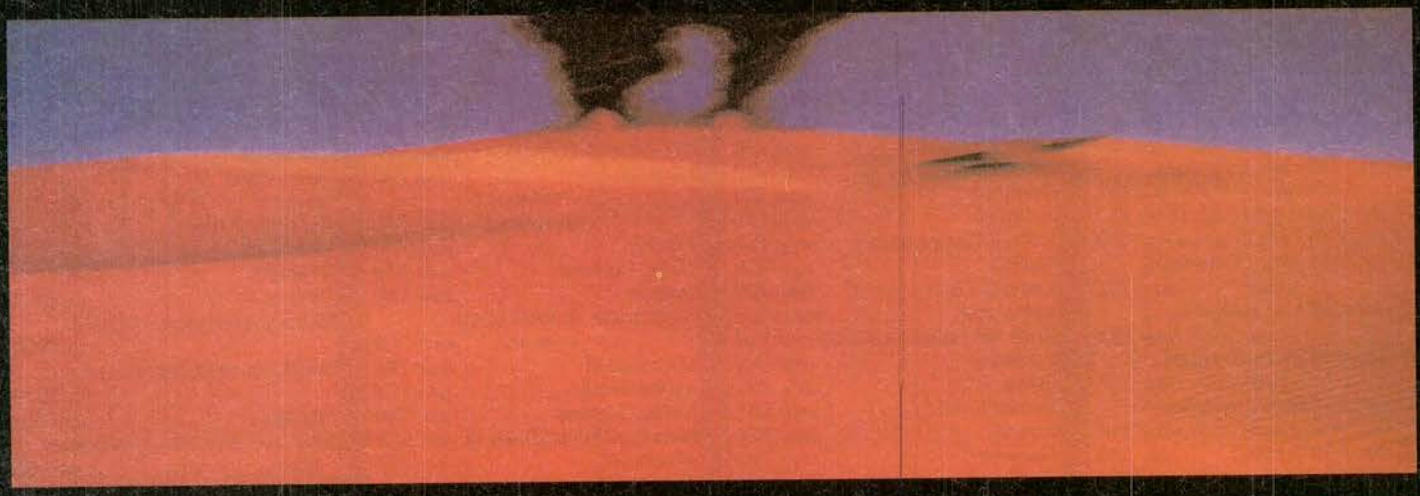
PD Software: Something for everyone

THIS month we bring you:

- Adventure
- Blackhole
- Castle Blackheart
- Clipboard
- Library
- Multiarc
- Rubikcloc

DUNE II™

One of the biggest games ever now available on the Acorn



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FEB 95

Unrealised potential

THERE'S a maxim that goes: If you have nothing to say, don't say it. Well rather than trawl the depths in order to find something explosive to discuss, we received this letter from one of our fairly regular contributors, Clem Vogler, and he's a bit annoyed:

IF you run a PC card on the Risc PC you may have been looking for your backslash (\) key. It is one of life's ironies that RISC OS users can safely ignore the backslash – until they start running DOS. At which point it stops working.

Persistent searchers, having toggled between US and UK keyboards, will have found the \ key, but simultaneously lost their £ key. A last minute change of keyboard specification by Acorn means you can't have both at once – or couldn't till now. Phone Aleph One on 01223 811679 for the latest revision of their PC card software and your problems will be over. If you can't afford the phone call, or like computers to be challenging, you could always try Alt+(numeric)92, which is guaranteed to coax a \ out of anything not brain dead.

Among Acorn's more sober claims for the Risc PC: It makes you gorgeously attractive, eternally happy, fabulously rich and so on, I noticed something altogether more outrageous. The Risc PC is about to deliver Unix native. *I've enthused about Unix for several years now, but I'd never heard of this "Unix native".*

Intrigued, I rang Acorn for the low-down. Native means it runs on an ARM processor, you don't need a 68000 or whatever. Obvious, really. So that's great. I'll be able to run all those powerful Unix applications: 4GLs like Infomix and Oracle and super spreadsheets like Wingz. Well, yes; provided ***you*** *compile the source code.*

Why do ***I*** *have to compile the source code? Because Acorn doesn't have the financial muscle to get this quality of software ported to run under RISC OS – despite the fact that unleashing this type of power software on such a low-cost machine would provide an irresistable combination for Unix users. Rule number one in the software houses' fraternity is: Thou shalt not release the source code. Otherwise, you do all the hard programming graft and somebody else cleans up on the profits.*

So I won't be able to run real Unix applications under Unix native anymore than I could under the, now forgotten, Acorn 140 or 260? Well no, but you'll be able to spend lots of time experimenting with Unix's elaborate library of software tools. What's on offer is LINUX – a Unix clone developed for 386/486s by Linus Torvalds which provides TCPIP, UUCP, X-Windows, C and SmallTalk, together with Slip and ppp, which are programs to access Internet via the serial port.

Though quite interesting to students studying Unix, LINUX (for x86s) is actually available as a CD freebie with the book, Internet CD by Vivian Neou (Prentice Hall). Acorn has so little faith in its ability to compete in the big, wide world of Unix, that it isn't actually doing the development itself, but has farmed it out to a bunch of students. I bet they're heaving sighs of relief down at Sun Microsystems Inc.

Clem Vogler

Steve Turnbull steps aside for Clem Vogler to make a point

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Asynchronous ARM

STEVE Furber's research in Manchester into asynchronous computing has long been of interest to ARM, but December saw a new agreement in which ARM acquired the rights to the research into computing without clocks. March '94 saw the worlds first fully asynchronous implementation of a commercial processor, a development of the ARM60 called Amulet1.

Asynchronous techniques offer flexibility when it comes to reducing power consumption and boosting performance. ARM's Engineering Director, Tudor Brown, remarked: "The ARM810 processor *(due 1995)* has already benefited from some of the ideas explored in Amulet and complete functional blocks, like a multiplier, may go asynchronous in a couple more product generations."

Traditional computer chips use a clock signal to keep their circuitry in step, ensuring that each circuit has finished its task before passing the result to the next circuit. This means that the clock signal frequency can only be as fast as the slowest circuit in the chip.

Asynchronous designs have no clock. Rather, each circuit has additional logic to ensure that its tasks are finished before it passes the result on. This can increase the speed as it can be as fast as its average circuit. In addition, modern CMOS designs consume electricity only when active but clocked designs are active every clock pulse, regardless of whether they have data to work on or not.

As chips use more and more transistors, it becomes harder to ensure that the clock signal arrives at every circuit at the same time. With the maximum number of transistors on a chip doubling every 18 months, the clock synchronisation problem may become insurmountable.

However, with asynchronous design there is no clock and therefore no problem. In the past the additional logic needed was too complex but recent advances in asynchronous design methods, together with ever increasing levels of integration on a chip, have removed this barrier, making asynchronous technology commercially viable.

CD info

WITH the falling cost of hardware and software, and aided by the CD-Rom initiative last year, there is a larger market for CDs than ever before. The quality of Acorn CDs has never been in question and now the quantity is rising to meet it.

Education products such as *Mechanisms* from Creative Curriculum Software (01422 340524) provide a graphical demonstration of the link between mechanical theory and practice for those in maths, technology and physics. However, for home users, CDs are beginning to be a great DTP resource.

● *Two images CD-Circle will give you access to*

Zenta Multimedia (0121 3583054) are beginning to produce a range of low-cost CDs created for the Acorn market. *Font Emporium* costs £29.95 (inc VAT) and holds over 500 different RISC OS outline fonts.

A font selection program comes on the disk which displays full character previews on demand.

There is also a built-in link with EasyFont from Fabis Computing.

The *Clipart Collection* is also £29.95 and contains about 2,500 Draw and ArtWorks files. There are also a few thousand mono RISC OS sprites – in total, 500Mb of clip-art.

CD-Circle (0117 97 999 79) is a new operation formed by Peter Hughes and Dave Rees. The aim is to give RISC OS owners access to many of the CD-Roms already in circulation for other platforms. To this end they have developed a range of drivers such as MMviewer and Darkroom. A disk catalogue is available which lets you know which PC and Mac CDs you can access.

They have written a visual and easy-to-use on-disk catalogue and ordering service and the first issue of their bi-monthly catalogue covers 242 CDs. CD-Circle works on a membership basis; for an annual subscription of £12.50, CDs at a discount price, including the CDs utilising Computer Concept's Movie Magic card, are on offer.

Cumana (01483 503121) has released a similar paper resource – its seventh *CD-Rom and Multimedia Portfolio*. As well as information on products there is advice on the latest CD-Rom drives and software to the very best in networking solutions. There are also sections of expansion options and peripherals. For your free copy contact Cumana directly.

Eclipse and Gamesware split

THE developers behind Robocod and the Powerpads – Eclipse (01243 531194) – have decided to market its products itself in future rather than through Gamesware. Playdays, Aries and Simon the Sorcerer, though developed by Eclipse, will still be available direct from Gamesware.

However, Robocod, Xenon2, Games Wizard, Fred, Ixion, Cycloids, the PowerPads, Software 42 Collection, Dune II, Global Effect, Rome AD and the PowerStick will be only available from Eclipse and its dealers.

Eclipse has also moved to: Unit 1, Shopwhyke Centre, Chichester, West Sussex PO20 6GD and if you want a demo disk of its products, contact them directly and they will send you one absolutely free.

Falling apples

COMPUTER CONCEPTS (01442 63933) has released a *Light* version of its MacFS software. If you have no need for the SyQuest facilities of the original MacFS this version, at £49, is for you. This is aimed at people who only want to transfer information to and from Mac floppy disks, so if you need the ability to read and write Mac hard disks as well as access optical disks, you'll have to opt for the full version of MacFS which retails for £99.

Video action

SONAMARA (01626 873866) has reduced its MultiGen genlock adaptor from £429.70 to 399.95 inc VAT. This is a true scan converter which supports resolution of up to 640 x 480dpi in up to 256,000 colours.

As well as providing simultaneous monitor and TV output, Multigen has three output signals – RGB, S-Video and composite video – and two inputs of S-Video and composite video. There are under and over scan options, freeze frame, fade and found types of mode as well as PAL and NTSC capability.

And the little one said move over...

UNCERTAINTY over the future of Commodore UK has left high street shops crying for a replacement for the Amiga on their shelves. In stepped Acorn's new distributor ZCL, with three low-priced bundles aimed at the home: The Action Pack, Early Years and Learning Curve Packs are aimed at the £299 and £399 markets.

Soft options

IF you are watching your pennies Soft Rock Software's (0117 949 1634) offers may interest you. You can now buy five budget games – Escape from Exeria, Guardians of the Labyrinth, Drop Rock, Switch and Floopy – for £19.99 saving £5. If you have a Risc PC you can buy these games plus Trellis – an adventurer interpreter – for £13.99.

Mono or colour

THE Canon BJC-4000 is now available with a Computer Concepts (01442 63933) Turbo Driver. This colour printer is aimed at the user who primarily prints in black and white but occasionally wants access to colour. The mono printing is fast due to a special high-speed cartridge and can be as high as 720dpi. It can also produce 360dpi colour prints with inks designed by Canon that are fast-drying and water-resistant.

The TurboDriver software is now in version 4, supports the Risc PC and prevents over saturations and more accurate colour work. 4Mb of ram is recommended and with the software the printer sells for £369.

Star for a day

JENNY Rutter and Sam Campaigne from Sherston Primary School won an art competition to officially open Sherston Software's new HQ, Angel House.

The 10 and 6-year old were collected in a white Rolls Royce and greeted outside Angel House by an honour guard of their classmates, a red carpet, parents and guests.

"Considering Sherston publishes educational software for children, we all thought that it would be much more appropriate for our new offices to be opened by a couple of primary school children rather than a local dignitary," commented Sherston's MD, Bill Bonham.

Network know-how

A NEW book has been produced by Northwest SEMERC (0161-627 4469) to help teachers confused about the process of networking. Called Network Acorn, author Geoff Preston gives advice and technical solutions based on his experiences as Network Manager in a school.

The book starts by outlining the types of networks available and how they should be used. It then goes on to describe how to install and set up the software, as well as giving useful hints on how to cope with day-to-day problems.

Experienced managers are catered for as well with a section of tips and an accompanying disk of utilities. The cost is £12.

Cumana and SJ Research combine

FUTURE-proof networking is the aim of a joint marketing agreement under which Cumana becomes sole distributor for SJ Research's educational products. Cumana will also take over the responsibility for manufacturing, leaving SJ Research free to concentrate on its research and development of future ATM networking equipment.

Cumana (01483 503121) will be launching CD-Net 2 in January which is compatible with all existing Acorn networks and is modular, making it easy to include future developments such as new CD-Rom formats and technologies. The program will have information regarding most Acorn CD-Rom titles and will operate these within predefined but reconfigurable settings. If a CD is not recognised it will be automatically installed into the program's archive, as set-up by the network manager. Changes to loaded disks will be dynamically updated at the client machine so users are always fully informed. Support has also been extended to PC DOS and Windows disks.

It also has a complete starter system for school and home, suitable for children aged 5 to 11. Based on the 2Mb A3010, you can buy computer, Oscar CD-Rom drive and software for £499 or add a monitor for £668. With this you get stereo headphones, SEMERC's Treasure Chest CD-Rom, Photo Album 1 Photo CD, PhotoView and !Speedy CD software plus a range of utilities. There are also £114 of discount vouchers.

On-line Zynet

MINERVA Software has a sister – Zynet (01392 426160 or *zynet@zynet.net*). This new company is an Internet provider and the first to address the education market specifically. It has a range of comprehensive packages from individual connection and mail forwarding through to a full network connection, with options for teachers to connect from home. Prices start at £20 for setup and a £6/month charge.

It also provides a resource facility for education which will give shared storage and resources allowing schools across the country to carry out joint projects. Zynet will also be providing users with specialist *browser* software written specifically for the Acorn platform and unlike most other Internet Providers, Zynet is able to connect an existing network as well as individual computers.

If you are in the South West of Britain you can access additional services, including a variety of local community and education information. Plans are to extend its local access and information points into other areas later in the year.

To ease the move on to the information superhighway, Zynet recognise the need for comprehensive starter packs.These include *easy-to-use* software with a tutorial so that users will achieve a rapid and efficient access on to the Internet. Educational establishments will also have a customised Home Page.

Training and support are deemed to be vital by Zynet and this need has also been addressed. Training courses include *Discover the Internet* and *Navigating Cyberspace.*

Low-cost SCSI CD

EESOX (01223 264242) has released two SCSI-2 CD-Rom drives which start at £109. The *Silver* drive is a high performance double-speed unit with 256k of internal cache and an average access time of 280ms. In its internal format it costs £109, or £179 as an external model.

The *Gold* drive sells at £299 and £369 for internal and external versions and is a quad speed drive with an average access time of 225ms and 256k of internal cache. Both drives need an Acorn compatible SCSI-1 or SCSI-2 interface card with CDFS 2.20 or later.

You can buy Eesox's SCSI-2 CD-Rom driver separately for £25. This software scans the SCSI bus for any CD-Rom drive which reports itself as being SCSI-2 compliant and then tells CDFS that it's there. The driver then tailors itself according to the features available. Though you will need CDFS 2.20 or later, a SCSI-2 compliant drive, SCSI interface card and RISC OS 3 or later.

The driver supports standard CD-Roms, CD-DA (audio), XA and Photo CD, single session and multi-session, multi-speed and multi-platter drivers and Video CD, with both Green and White Book formats.

Nearly all SCSI CD-Rom drives are now SCSI-2 compliant, so drives intended for the PC or Mac markets can be used with RISC OS machines including: Toshiba 3501, Pioneer 104x, AppleCD300 and the Sony CDU 561. You can also use the SCSI-2 driver with the PC emulator and PC card via the MSCDEX driver supplied with these products.

Updated classics

LONGMAN Logotron (0223 425558) has released new versions of Eureka and Revelation. Eureka 3 now allows information exchange with Lotus 1-2-3 and Microsoft Excel on Apple and PC platforms. In addition, professional quality graphics or charts can be embedded into DTPed documents and loaded back into Eureka with a mouse click.

On the artistic front, Revelation Image Pro has been extended to given more effects and a greater range of colours. Now with 24-bit graphics, there is a new level of sophistication with effects and transformations such as picture blending, colour shifting and lens simulation.

Improved sprite manipulation mixed with access to 16.7 million colour and 256 greyscale processing means that highly professional results can be achieved very simply. Revelation is priced at £49 with preferential rates for existing users.

What's on

BETT '95 Technology in Education
11-14 January
National Hall, Olympia, London
Contact: EMAP (0181-984 7711)

The Education Show 1995
2-4 March
NEC, Birmingham
Contact: EMAP (0181-984 7711)

Computer and Dyslexia
21-23 April
University of Nottingham
Contact: BDA (01737 765851)

Acorn User Show
6-7 May 1994
Harrogate International Centre, Harrogate
Contact: Safesell (01737 814084)

Riscy roms

UNIQUEWAY (01222 644611) has compiled the RISC Disk CD-Rom. The £19.95 CD contains utilities, Replay movies, Photo CD images, clip art as well as AVI, FLI and MPEG players. There is also a range of demonstration software from all the major software houses. A true taster of the Acorn world.

The return of the dragon

DRAGON Droom was one of the first educational packages available for the Archimedes and Resource (01509 672222) has revitalised the creature who first made his appearance on the BBC B. Dragon Droom needs 2Mb ram and costs £30 for Archimedes and Risc PC versions. The sequels, Dragon Droom's Revenge and StarDust are also available for the Risc PC priced at £34 and £30 respectively.

Chunnel tunes

SIBELIUS Software (0223 302765) has revealed that Sibelius 7 was used to compose and print the music heralding the first passenger train journeys through the Channel Tunnel. Entitled *Music for the Royal Eurostar* and composed by Paul Patterson, this is a fanfare performed by the London Brass Virtuoso at Waterloo Station.

The fanfare combines Rule Brittania and the Marseillaise with music Paul wrote for the official opening of the Tunnel in May.

Education and edutainment

DUE to the high amount of interest from home users wanting *edutainment* software, Minerva (01392 437756) has released a cut-down version of PrimeSolver for £49.95. The education version with additional features is still available.

DRAW_Changer

The draw file effects processor that lets you globally change fill colour and line settings without ungrouping.
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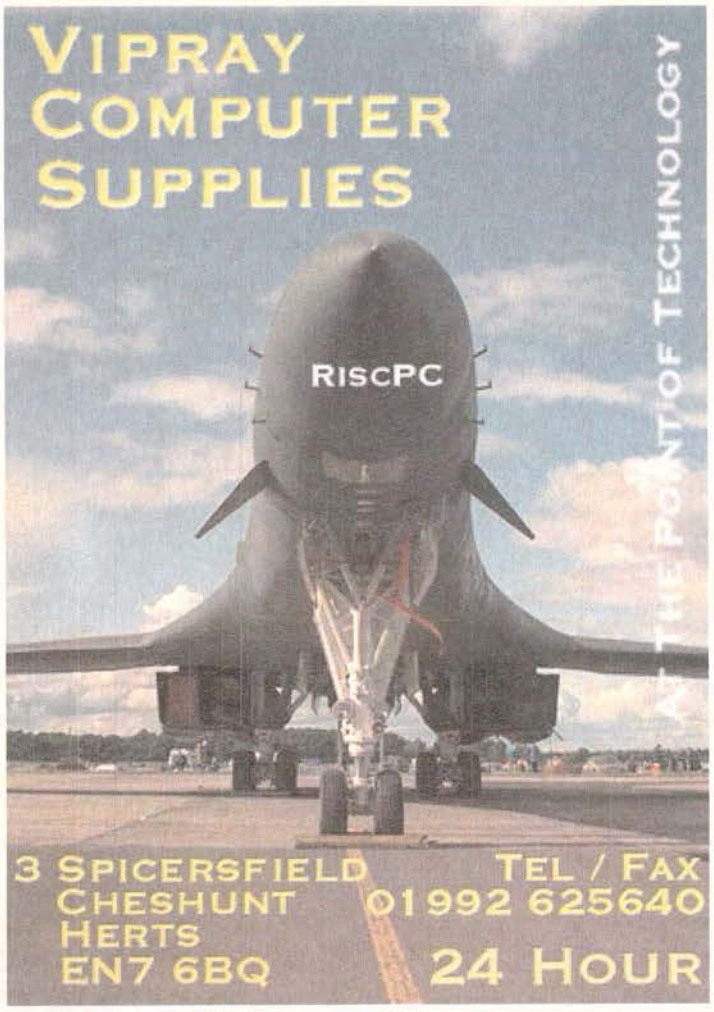

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New Product

Dalriada are soon to release their second DTP utility. Just as TableMate has proven to be the de facto standard for table creation, this new application will be the leading package in its field - diagramming. Whether you want to research your family tree, or organise a company, this is the program you need. Features include:

- Produce flowcharts, process diagrams, trees, organisational charts, annotated diagrams...
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- Text or graphics inside symbols
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- O.L.E. compatible - so easy to use with leading packages such as Impression
- A wide selection of standard symbols provided

TableMate 2

TableMate 1.1 has been bundled with Impression Style and Publisher from Computer Concepts. TableMate 2 greatly improves on TableMate's features whilst retaining its ease of use. New facilities include:

- Word wrapping inside columns
- Full colour handling
- Draw files and Equasor files can be placed inside cells
- Insert & delete multiple rows or columns
- Cut-and-paste editing
- Greater control of linespacing
- Multi-document editor
- Variable width of rulings

Price: £32-50 inc. p&p. Impression Style and Publisher users receive a £15 discount.

Price of new product: £50 inc. p&p.

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End of term or just hearsay?

Rajesh Sinha compares the merits of Arcterm 7 and Hearsay II as he scans the networks

CYBERSURFING demands three essential components – a computer, a modem and communications software. Arcterm and Hearsay are the two main packages for the Acorn range but what do they offer in terms of terminal emulation and good price?

Arcterm 7

The Serial Port's offering is a multitasking program with a number of advanced features that modem users will find helpful. There are two disks for this package – the program disk and an extras disk containing utilities and additional files.

Once the program has loaded, clicking on the icon opens a large black window which allows communication to take place. At this stage, if your modem is not switched on or is disconnected, a message will be displayed on screen. You can configure the software for your particular modem by selecting *Modem Config.* from the Configuration menu and clicking next to your modem's name.

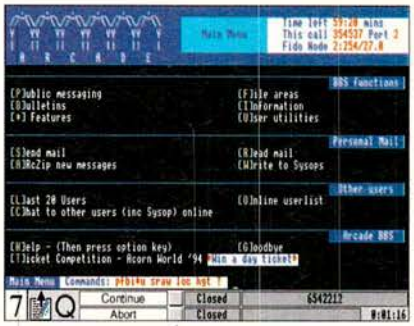
Updating the telephone store is another useful activity at this stage. You can store any telephone numbers you are likely to use, and other helpful details, so there is no need to enter them every time you want to dial. There are a few telephone numbers supplied with the software and to dial a number from the store, simply double-click on the name displayed.

If all is well, your modem should spring to life and dial your requested number. A window will appear to show that an attempted connection is being made, and if you have a modem with an in-built speaker, high-pitched chirps or clicks will meet your ears. A few seconds later you will connect to another modem and be welcomed by an introductory message. Following the instructions and reading any help files should now enable you to find your way around.

As well as the basic requirements for a communications package, Arcterm offers a great deal more to both the novice and experienced user. Many bulletin boards and on-line services have tedious logging in processes which can be avoided by saving your username and password in Arcterm so that it can be transmitted automatically whenever you dial in.

Another good idea is the use of sound effects at certain points in the program. Arcterm allows sound samples to be played at key moments, such as when you have finally connected to a bulletin board and when data transferral has finished. This is by no means essential, but is very helpful to users and lets you take a break while a large file is being transferred without having to look up every few seconds to check everything's OK.

Arcterm supports a wide range of terminal emulations and is likely to suit the requirements of most users. Viewdata emulation allows viewing and access to Prestel services, while PC-ANSI provides an interface to most bulletin boards. Campus 2000 is also supported, as well as emulation of DEC terminals such as VT52 and VT102.



● *Exploring Arcade with Arcterm*

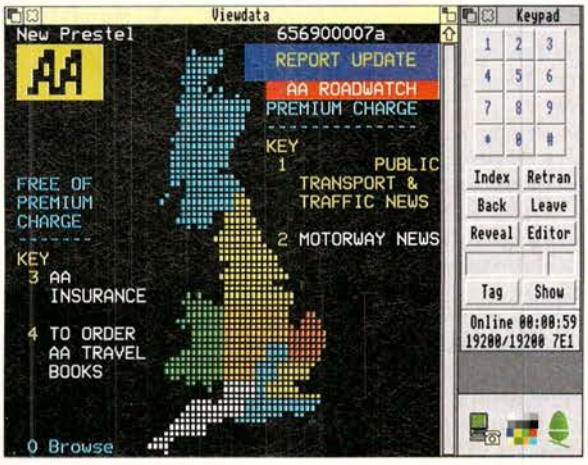
File transfer is one of the main reasons modems are used, and Arcterm allows transferral of files using any of the more popular methods. Xmodem, Ymodem, Zmodem and Kermit are four of the widely used transmission techniques supported and will be suitable for all but the most obscure bulletin boards or information services.

If you would like to use your home computer from elsewhere, or would like to allow other users to access your machine, the host mode makes this possible. Full password protection and other facilities ensure the security of your data, and users can mail each other, save or retrieve files and perform other tasks remotely.

There are many more features of Arcterm which add to its attractiveness as a home or business communications package. Script files can be created to control Arcterm in many ways, call costing can be selected to calculate the price ➤

PRODUCT SPOTLIGHT

Product: Arcterm 7
Price: £68 (inc VAT)
Supplier: The Serial Port
Tel: (0749) 670058
Requirements: Modem (A3000s must have serial upgrade)



● *Accessing Prestel using Hearsay*

of each on-line session and key combinations can be used as shortcuts to most of the commands. Arcterm is easy to use and has a number of nice touches which create a pleasant environment for users.

A fair-sized manual is supplied with the software, and a modem lead. The lead is to ensure that the software can control your modem, and the manual explains not only how to use Arcterm but also much of the jargon behind computer communications. It also features sections on Cyberpunk and Smileys, and is a good general introduction to computer communications.

Hearsay II

As well as all the standard requirements of a terminal emulator, there are many additional features to Hearsay II. Like Arcterm, it is fully RISC OS compliant and multitasking, and is supplied with a program disk and an extras disk.

Once again, selecting a modem driver is a good first step. The current release of Hearsay is supplied with just 12 modem drivers, while Arcterm supports 45 different models. Writing your own driver is a somewhat daunting task, but Beebug will endeavour to produce a driver for any modems not supported. Once your modem is set up, you can begin communicating.

Hearsay's terminal window fits neatly on to the screen, but unlike Arcterm there is no on-screen information about the bulletin board being called and how long you have been on-line. Some people will prefer the simpler layout from Hearsay, but I found Arcterm's timer and other reminders very helpful.

Hearsay supports the main terminal emulations such as PC-ANSI and Viewdata, and also has a Tektronix and VT320 option. If the host system you intend to call supports Tektronix, VT320 or VT220, Hearsay may be the only option for effective communication.

Although Hearsay will not play sound samples, its icon flashes if data is received from your modem while there is no window open. If you are searching a large database or carrying out other tasks where long waiting times are expected, this feature allows you to use other applications on your machine until the remote computer responds.

Call logging and costing are two features supported by both Hearsay and Arcterm. Arcterm's manual provides a list of bulletin boards and numbers, but only two were actually stored on disk. A telephone directory and auto-logon facilities are also provided with Hearsay, and the directory here is brimming with numbers for you to try. This was very helpful and allows inexperienced users to try many different styles of online services without having to scour through the manual.

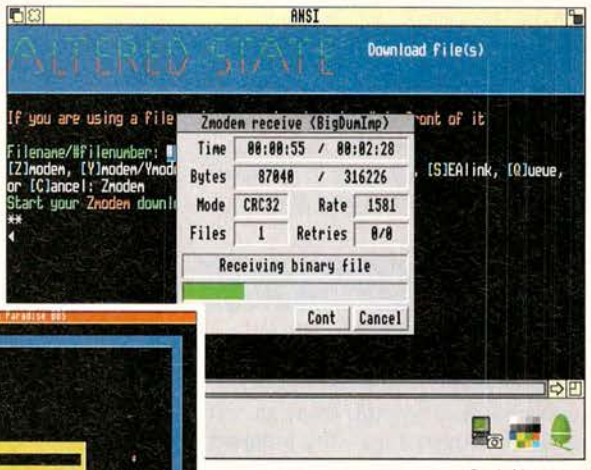
Another advantage of Hearsay is that several telephone numbers can be dialled automatically in succession. Cycle dialling is useful if the services you are trying are often engaged, as this option dials different numbers in turn until a connection is made. Spool files can also be created and played back later, and scripts written by users to customise the package further. The manual is well written and helpful, with a glossary and other information.

Hearsay's greatest innovation is the GIF previewer. This application allows you to view picture files as they are being downloaded to your machine, so you can decide whether or not you want the file while it is being transmitted. It is expensive to download a complete graphics file, so if you are unsure of the subject matter or you believe you may have the picture already, you can stop the download to save time.

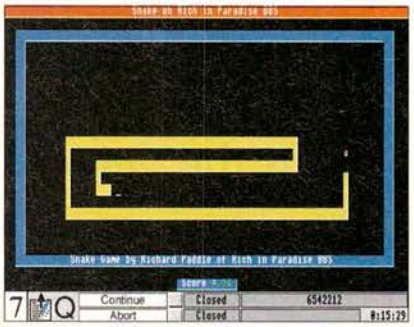
Net differences?

Hearsay II and Arcterm 7 are essentially both terminal emulators, but each offers quite different additional features. Arcterm has an Econet option which allows networked Acorn machines access to the same modem, and in host mode, users can call a machine running Arcterm so that mail and files can be sent and received. Hearsay offers a wider range of terminal emulations and its GIF file previewer.

Your choice of package is likely to depend on the types of machine you will be connecting to. Standard bulletin boards generally use PC-ANSI, but more specialist host machines may require an emulation supported by Hearsay alone. If you would like to peruse your hard disk remotely, or to allow network access to a modem, Arcterm is probably more suited to your needs.



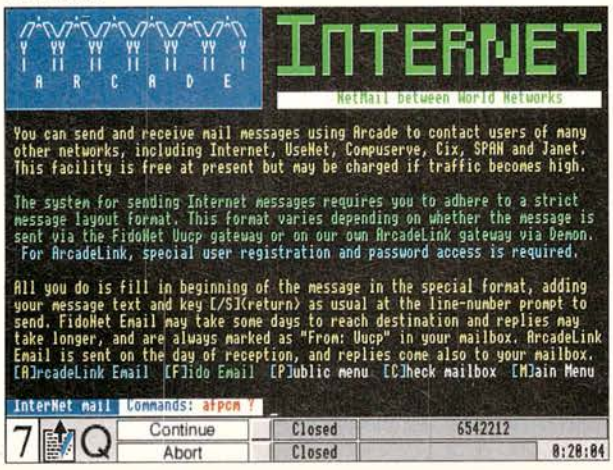
● *A Hearsay download from Altered State BBS*



● *On-line games on Arcade*

PRODUCT SPOTLIGHT

Product: Hearsay II
Price: £75
Supplier: Beebug
Tel: (0727) 840303
Requirements: 2Mb of ram, Modem (A3000s must have serial upgrade)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InterNet mail Commands: atpcm ?
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Abort
Closed
Closed
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0:28:04

● *E-Mail the world on Arcade*

Modem matters

Rajesh Sinha dispels your communications concerns

MOST people learn about comms through trial and error. Here is a list of troubleshooting comments and tips to get the most from your software and hardware as soon as possible and with minimal costs.

- Check that the modem and software you wish to use are compatible – Hearsay is only supplied with a few modem drivers and more obscure models will need special drivers written specifically for them. Check with The Serial Port or Beebug if you're not sure.

- If down or uploading software, try to keep the pointer motionless. A problem with the RISC OS polling routines means that any movement of the mouse is likely to reduce transmission rates in data communications.

- If downloading software, check that there is plenty of space available on your hard or floppy disk drive. It's annoying to receive 90 per cent of a file and then discover you're out of space! If you have a slow modem or can never find floppies to use, perhaps buying 'Pick Your Own' disks from boards like Arcade is an easier option.

- Try to keep heavy electrical equipment away from modems and telephone lines. Any interference from vacuum cleaners, large fans or radio equipment is likely to adversely affect transmission rates. If you frequently experience slower transmission speeds than expected, get the telephone company to check your line.

- When buying a modem, check the lead supplied is suitable for the computer, the modem and the software. Some leads will work happily with Hearsay, but not with Arcterm, so test that your setup works before committing yourself.

- If you have a call-waiting option on your telephone line, check it is turned off while you are using your modem – the audible beep which indicates another incoming call will confuse your modem and reduce transmission speeds. Your telephone network provider will be able to tell you how to do this with a few keypresses before making your call.

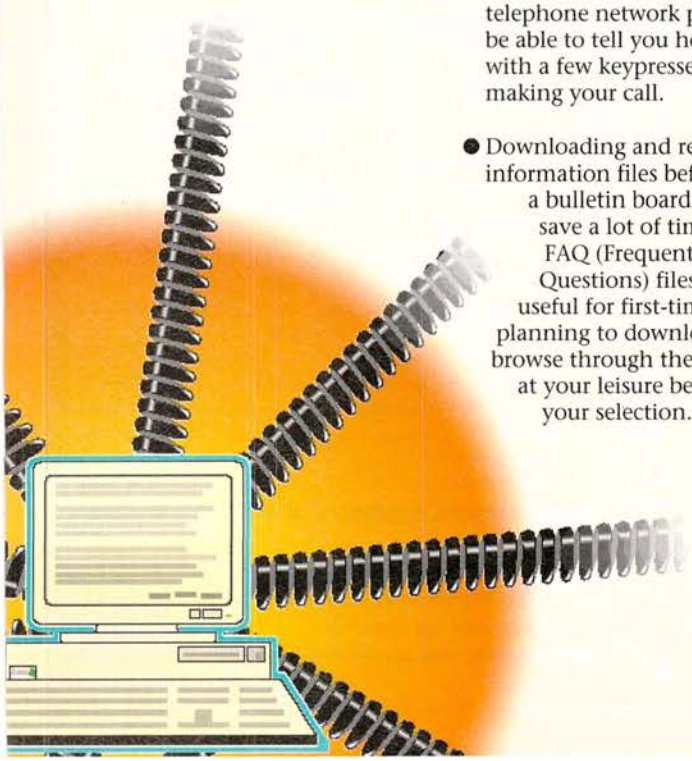
- Downloading and reading information files before exploring a bulletin board further can save a lot of time and effort. FAQ (Frequently Asked Questions) files are also useful for first-time callers. If planning to download files, browse through the filelist off-line at your leisure before making your selection.

- Keep an eye on the time while you're on-line or you'll find you use up your 'credit' on bulletin boards very quickly and end up with a hefty phone bill. Hearsay and Arcterm, as well as most BBSs, remember the length of time you've been connected. Some even help you keep track of your expenses by calculating call costs.

- Viruses are not very prevalent on bulletin boards which support Acorn computers, and most *sysops* (system operators) are very conscientious about checking the integrity of dubious files. If you are likely to be using lots of public domain software, however, a virus detector is a wise investment.

- Uploading a lot of software is not only an altruistic activity to partake in, but a steady stream of offerings from your machine is likely to earn you brownie points (and greater user credit) from the BBS's sysop. Using file compression software such as SparkPlug can save you a great deal of time in transmitting data.

- Get involved! It's fine to explore and browse through messages, but remember to add your own wit and wisdom wherever it's missing.



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Alternative input

Daniel Clarke looks at the options open to Acorn users when it comes to input devices

THE need to input information in order to store it, manipulate it, and retrieve it, has been around a long time. The input through our five senses, which in this case is seeing the written word with our eye, reaches our brain which processes it. Mechanical input began with the earliest daubing of paint on cave walls, hieroglyphics written by quills on parchment, through to the printing press and the typewriter.

The advent of the computer resulted in the development of many electronic input devices. The fittest have survived in a rapidly evolving computer industry which seems to mimic Darwin's theory. We are going to explore some of the survivors and new mutations. So, using the popular phrase, *contenders ready?*

Keyboards

The keyboard is a standard means of input as it is a very straightforward way of inputting characters. Based on the typewriter layout, it is very hard to imagine it not staying an essential piece of equipment. Keyboards do vary and the Risc PC allows you to access any standard PC keyboard – though the words *standard* and *PC* are not necessarily synonymous – including some of the cute, angled, ergonomic ones.

These claim to cut the risk of RSI (Repetitive Strain Injury), though this is a controversial area and the best advice is that if you feel more comfortable with a keyboard which is hinged in the middle for a more circular work area, go for it. However, before you shell out I'd try some of the typing mats you can get. I have started to use a Rexel rest which sit on the desk in front of the spacebar and raises your wrists while typing. If you do a lot of typing this does make life more comfortable.

Meanwhile, a colleague has discovered a foot rest which purportedly, by raising your feet, increases your body's circulation. This certainly takes the strain off the back, though I found that it works best for people with long legs.

Keyboards do seize-up or keys fall off in transit and Castle Technology (01728 621222) has a range of Ergo replacement keyboards – one of which I have been using successfully on an A5000 for some time. These cost £99 or £49 for the Risc PC version and you can buy an adaptor for the A3000 for an additional £30.

The concept keyboard may be what you think of when it comes to replacement keyboards and these are mostly found in schools for specific projects, young pupils or disabled users. The principle is very straightforward – a series of sensors are placed on a plastic film which sends a predetermined message to the computer via the serial or parallel port when pressed. All the user sees is an *overlay* of words or pictures on top of an A3, A4 or A5 pad. Pressing the relevant word or picture has an effect on screen.

These concept or overlay keyboards are available from the Concept Keyboard Company, Northwest SEMERC (0161 627 4469) or Mikrodaisy (01703

● *Overlay/concept keyboards have applications for the younger...*

● *...and older users*

➤

455004). SEMERC has just released the Informatrix which is a super high resolution keyboard based on the 2010 model. As with the standard overlay keyboards, this can be programmed by software developers or users for the needs of a particular program or project.

Many Acorn education programs come with keyboard overlays and are an excellent way of introducing children to a computer if the keyboard and three-button mouse is too off-putting. Educationalists fall into two camps over this one. One group believes that as children are going to have to use the keyboard with upper case letters at some time and then eventually a mouse, they might as well start as they will have to go on. Others believe that as the technology exists to make the software as accessible as possible, you should use it even at the earliest age.

I haven't the space to go into detail about the devices available for special needs, but the Programmable Expanded Keyboard from Special Access Systems (0865 56154) allows greater control for those with motor control difficulties.

The keyboard is housed in a steel casing which acts as a keyguard so that hands and feet cannot press unwanted keys. There is a built-in LCD display which lets you program the keyboard's special functions such as repeats, delays, sound effects and the sticky key feature; this lets you depress Shift, Control or Alt keys while the next key is pressed, then it automatically turns itself off. The cost is £475.

● *Input at your fingertips on screen...*

Touch screens

The principle of the Touch Screen is very simple – make an overlay keyboard transparent and attach it to the monitor. TouchWindow from Keyboard Technology (0509 672222) can double as a touch screen, overlay keyboard and graphics tablet which goes someway to offsetting the cost of £279.

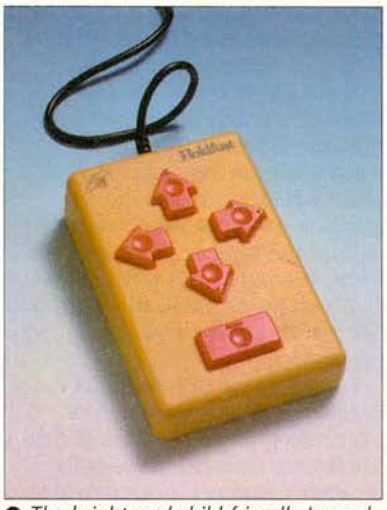
The accompanying software emulates and therefore replaces the mouse, and drives the window, while the touch-sensitive screen clips on to the monitor and plugs into the serial port.

Mice

Mice were invented in the beginning of 1965 by Douglas Enselbart and were first used with computers in 1983. The first mouse was just a box that had a ball on the bottom which sent information to a *printer* to draw where the mouse had gone. The idea of buttons was invented later.

There are various Acorn mice in the world as a different design appears each time there is a new model. These are interchangeable but when it comes to the Risc PC you can opt for a serial mouse – Microsoft, Mouse Systems drivers are built into the Configure options – though some of the unusual ones will need additional drivers added to your system.

Replacement mice can be bought from dealers and Clares Micro Supplies (01606 48511) does its own at £24.95 inc VAT which is comfortable to use and very reliable. The same can't be said for infra-red/cordless mice which have a nasty habit of switching off if you don't use them for a few minutes, and when it comes to playing games... Though fashionable at one time these are now very few and far between. However, before you change your entire mouse, how about replacing the ball? Purportedly Acorn mice have a light weight mouse and Oak Consultants (01279 718596) promises to improve this with a heavy weight mouse ball which gives the mouse a more positive feel. The cost is only £3.00 inc VAT and postage.



● *The bright and child-friendly Joypad*

Child options

Holdfast's (0684 594702) Early learning Joypad is a replacement for the mouse for either young or disabled people who find using the mouse, keyboard, or joystick too

● *...or desk*

difficult. It is very solid and robust and has five bright buttons to press. Four large arrows pointing in the four directions – up, down, left, and right – and only one *fire/click* button as some children find three buttons too complicated.

It works with all joystick-controlled or mouse-controlled software, and its features are well suited to educational software. The main drawback is that at present, it doesn't work with the Risc PC. Furthermore, even though the price is only £24.99, you'll need the Leading Edge Joystick Interface to use it which will set you back another £39.95. Even so, for primary schools or for home use, it is an ideal tool to help introduce children who really want to use the computer.

An alternative comes from Northwest SEMERC. Mouser is a simple concept whereby a small box sits alongside your computer and, depending on the ability of the user, a standard Acorn mouse can be set so that the menu, select or adjust buttons can be set to on or off. This costs £47 which is cheaper and I find it less fiddly to set up, but of course it does not circumvent the use of the keyboard.

Trackerballs

To use a trackerball well you have to persevere. I know people who would never return to a mouse having used one, others who turn pale at the thought of one. These are a definite plus for anyone with limited desk space or limited mobility. In essence, a trackerball is an upside down mouse with the same sensors and switches, but the ball moves on your palm rather than on a mouse mat. Special needs requirements are well supported here with ArcTracker from Northwest SEMERC and the Hereward Joystick Tracker from Penny & Giles.

As well as coming with hand guards to protect against accidental movements there are buttons to single or double-click, drag and access the menu, whether you are left or right handed. There are also buttons to choose between sideways or vertical movement only.

Trackerballs can just plug into the mouse port but the Acorn's mouse port can cause problems here, so check with your supplier that these are compatible.

Joysticks and gamepads

The French were the purveyors of the original joystick – invented by Robert Esnault-Pelterie in 1906 – as a control lever for the aeroplane, after the Wright brothers first powered flight in 1903. The first computers that really used joysticks were the Amiga and Atari as their speed of movement and simple action made them very appropriate for games.

However, if you are thinking of buying any joystick for the RISC OS machines, you need an interface such as the RTFM interface, the Illusions (economy or deluxe) interface, or the Leading Edge Joystick interface Mk2. They enable the computer to register the buttons or directions you have entered. The A3010 has a joystick port built-into the computer but on other machines the hardware interface may plug into the printer port, Econet socket or some other port.

The A3010 has the software to run any built-in standard switched joystick. For other models, the driver software is supplied with the joystick. Acorn has specified a standard joystick interface which allows a game to call a standard joystick module without having to know where the joystick is plugged in.

● *SEMERC's Mouser*

For games written before Acorn created the standard interface for joysticks, you can buy PD modules which will make the program think that keys are being pressed when you move the joystick.

The Leading Edge joystick interface is compatible with all the Acorn range except the Risc PC. It comes with a small interface box which plugs into the printer port at the back of your computer, allowing up to two joysticks and a printer to be connected at once. To switch between joystick or printer mode, just flick a switch.

You can quite easily program any button, direction, combination, or even *stirring* of the joystick to emulate any key(s) on the keyboard or mouse. There is also a large range of pre-made modules for games already released. Many new games have modules inside them allowing the joystick to be used, so you will ➤

● *The ArcTracker and Hereward Joystick Tracker*

Light Pen

Hands up those of you who remember the light pen? These beasties adorned the BBC 8-bit machines for a time but didn't make the transition to 32-bit. Castle Technology were previewing a RISC OS light pen at the recent Acorn World show. Prices will be between £150 and £200 and as we go to press the final touches are being made to the software. Watch this space.

➤

probably not need to create many new modules.

The RTFM interface was originally designed before Acorn issued its standard so it doesn't work with a lot of the software and is not so easy to use.

The Illusions economy interface plugs into the parallel printer port but only allows one joystick and has no space for a printer slot. The Deluxe version has all the features of the Leading Edge joystick interface but is selling for only £24.95. Also, in order to reduce mechanical strain on the printer port, this interface has short lengths of cable into which the joystick plugs. The length of the cables can be optionally extended and for every extra six feet of both cables, you only have to pay another £2.

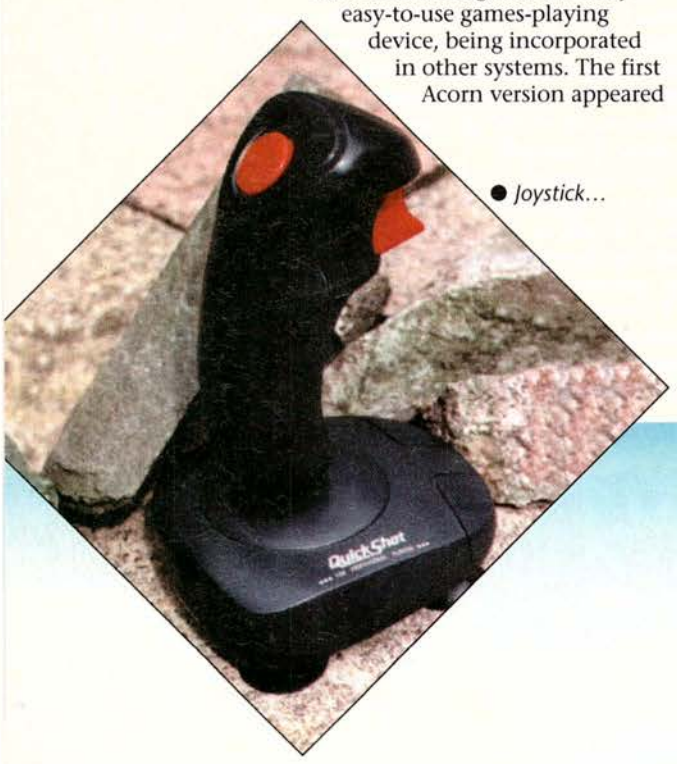
Gamepads became popular when Nintendo released the SNES and Sega the Megadrive. Since then they have been thought of as a very easy-to-use games-playing device, being incorporated in other systems. The first Acorn version appeared in 1993, and has been followed by a whole range of designs.

They all come in either single or dual configuration and all slot into the printer port. Some are more durable than others and save the cost of repairing your keyboard, a familiar problem for games fanatics and as two rival designers – Gamesware and TBA Software – are both trying to produce a competitive product it keeps the standard high and the price down.

The first Gamesware (01703 456523) pad was the Quickshot QS-182. This is a sturdy pad developed to gauge the popularity. The colour scheme was a bit bright to say the least and in the opinion of some, made it look cheap and plasticky. The software is easy to use, but is very slow compared to rivals. The price is £29.99 for a single and £39.99 for a dual. After realising that the public liked the pads, Gamesware acquired an improved design from Illusions that was very popular.

This is now called the Gamespad Pro and is very attractive, having already been a bestseller for the Nintendo. It has a grey body with sensibly placed buttons. The directional pad is very large, therefore giving an ease of play, while the software support is very fast. There are also six switches which give each button auto, turbo, or slow motion fire. It costs £29.99 for a single and £39.99 for a dual.

TBA's (01761 470003) *range* of pads were released at Acorn World '94 and when I say range of pads I mean range of pads. There is the Speedpad which is an eight button pad with auto-fire and the Logipad which looks like a Nintendo Gamepad but with microswitches. The Propad is like the Logipad, but with no microswitches, and last but definitely not least, the Phantom is the top of the range with adjustable autofire and all buttons microswitched. These are all functional pads that look great and are very practical. The prices should be released shortly.



● *Joystick...*

Tablets

Graphics tablets – also called serial tablets or digitisers – are pads that can be written on by a special pen. They are used with art packages because lots of artists dislike the mouse as a drawing implement and prefer something more natural and intuitive to use. These have been around for some time but have had limited acceptability in the Acorn market.

Vaughan Allanson (01638 578597) has *professional* quality tablets based on the Wacom graphics tablets. These come in A5 and A4 sizes and use a cordless, batteryless pressure-sensitive pen, although for some work you may prefer to use the alternative cordless four button *puck*. The latter is better for tracing points and lines. There is a transparent overlay which covers the active area and can protect and secure artwork which is being traced.

The tablet plugs into the serial port and once you've loaded the software you can use it alongside the standard mouse, although it is quite capable of totally replacing it. A button on the stylus acts as a menu button so you can disregard the keyboard and mouse.

Accuracy is the key if you plan to

● *...or Joypad?*

use these devices successfully. The manufacturers quote an accuracy of plus or minus 0.15mm with a resolution of 50 points/mm. Each pack comes with five extra pen tips and the stylus – gives a natural feel to computer work which can be hard to achieve with a mouse. I particularly liked the fact that the pen is cordless as I have *run into* leads before now on large tablets.

It is the pressure sensitivity which takes these tablets into a different sphere. The ability to change the opacity when painting or increase the application of an airbrush by pressing harder allows some excellent and natural effects to be achieved.

The accompanying software lets you reduce the area of the tablet used and the aspect ratio. Computer Concepts (01442 63933) also markets the Wacom graphics tablets with its own drivers which can also be used with packages such as PhotoDesk, DA's picture and Studio 24. For an extra £39, you can access the Eesox ArtWorks Pressure tool which allows pressure sensitive options within ArtWorks, though this is cheaper if you buy it at the same time as the tablet. The Computer Concepts and Vaughan Allanson drivers differ in the way they work so if you can, try these out to see which best suits your way of working.

You can now buy an A6-ish sized ArtPad with a resolution of over 2,000dpi, 200 samples per second and 256 levels of pressure. The cost is £159, although if you prefer there is an A5 version for £399 while an A4 pad is priced at £549 with larger sizes on request. Both companies bundle art and image processing software with the tablets, for instance Vaughan Allanson offers Studio 24 with the ArtPad for £239.

If you find the prices offputting,

First Computer Centre in Leeds (0532 319444) has written Acorn drivers from the Tabby Graphics Tablet. Whereas the Wacom tablets come from a Mac environment, the Tabby has been very popular on the more cost-conscious Amiga, ST and PC. For £79.99 (inc VAT and postage) this A6 tablet is very easy to set up – just plug it into the serial port and load the software.

The stylus is tethered but with a small tablet I don't think this presents any problems. It isn't as pressure sensitive as its more expensive cousin but is a good basic introductory tablet.

The software lets you decide whether pressing the stylus on the pad constitutes Select, Menu or Adjust on the mouse. This leaves Delete, Copy Page Down, Alt and Crtl, as well as the arrow keys to emulate the other mouse buttons, toggle the program and so on. These keyboard options can be set or disabled as desired and the stylus only overrides the mouse when it's within 1cm of the tablet's surface. The software also allows you to set the sample and pointer speed rate and smoothing. I thought that this might be a little clumsy but in practice I found the process worked well.

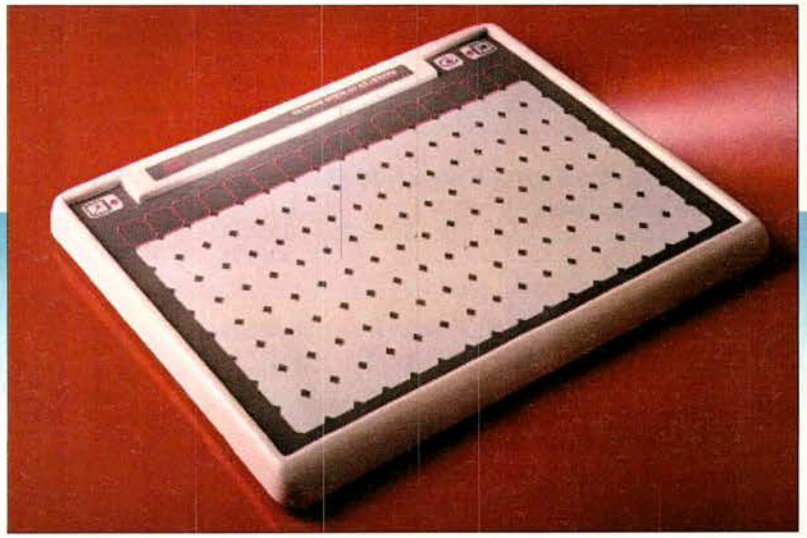
Though graphics tablets can replace a mouse, I see them more as an additional input device rather than a pure replacement. Both enhance even the most basic graphics package and it is good to see the software houses looking at graphics tablets as a likely input device, and one which can be used to give extra special results.

Summing up

Most computer users start with a keyboard and mouse. However, there is no reason why you should never move on from there. Replacement devices fall into three categories: Those which use the serial and parallel port, those which replace existing units and use their ports, and those that need adaptors.

What you can access will depend greatly on what Acorn machine you have. A3000 owners will often need adaptors as it doesn't have the serial port chips – this was revised when it came to the A3010 and A3020 but if in doubt check with Acorn or your dealer.

I have heard it argued that as the Sleuth and Optical OCR packages advance in leaps and bounds the keyboard becomes obsolete. Though I can't agree that the keyboard will ever disappear – or that it would be a good thing if it did – there are additions and alternatives to the standard equipment which will make your life and computer usage easier and more productive.



● *Devices, don't just have one purpose*

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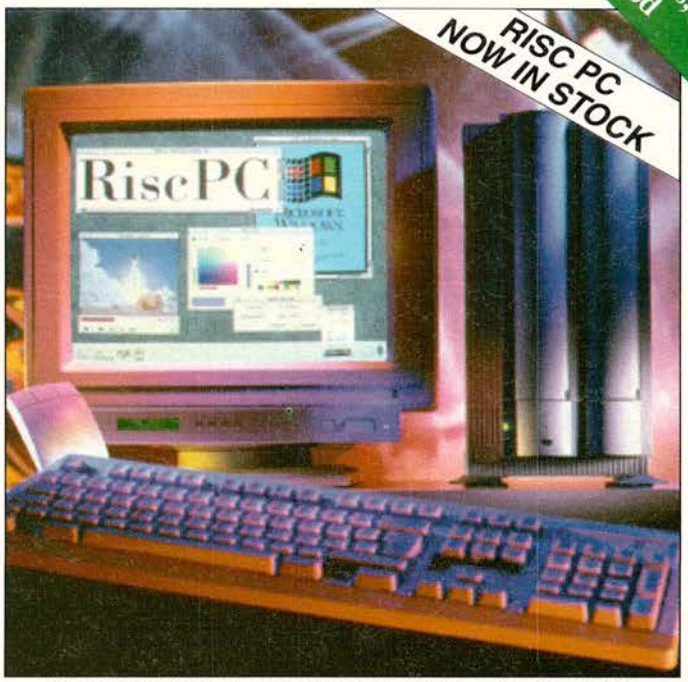


PART EXCHANGE SCHEME AVAILABLE

Movie Magic and MPEG

Rob Miller continues his assessment of MPEG in the Acorn market

WHEN Online Media was formed last year, the need arose for special hardware to be produced for its Set Top Boxes. This is the hardware required to enable users to interact with their televisions and is expected to provide services such as home shopping and video-on-demand.

One of the most important components in the STB setup is the ability to decompress MPEG video data into moving pictures and sound. MPEG has already been covered in the December issue and I would advise anyone who has not read that piece yet to do so now. Suffice it to say, MPEG is an industry standard (a real one), defining the way in which video data is compressed and decompressed.

Being able to handle MPEG data means that the STB can easily support concepts such as video-on-demand, which requires a large amount of information to be transferred over relatively slow data lines. The average compression rate of MPEG is about 100:1 which means that a transfer rate of about 300 k/s is required.

Movie Magic

As Online Media's STB is based around the Acorn Risc PC, the specialised hardware used within it can be transferred and used in the Risc PC 600 with little or no alteration. The MPEG decoder card designed by Wild Vision is now available as a separate item and allows the user to read and display any MPEG movie, whether it be on CD-Rom disc or even a network.

The Movie Magic card is a single width expansion card and is fitted in the Risc PC like any other add-on board. Installation is simple and just requires the card to be slotted into an available expansion socket. A single SCART socket on the back of the card provides output to a suitable TV or monitor capable of displaying a PAL-signal picture.

Any 50Hz PAL monitor with an RGB input will do and the old Acorn AKF11, Eizo 9060 or any domestic TV fitted with a SCART connector are all fine. Wild Vision can provide a fix for anyone who has composite-video-only input on their monitor.

At present, the Movie Magic card is only suitable for PAL monitors, but a later (or upgraded) version will enable you to use a multiscan monitor as well as provide the facility to watch MPEG movies in a window on the desktop. The cost of this upgrade is expected to be about £100 more – or £349 +VAT for the complete card.

A SCART to SCART cable is included with the card and this allows you to get a video signal, as well as stereo sound from the expansion card. Some users might want to channel the sound ➤

● *Time for a film, how about A Fish Called Wanda?*

directly to an amplifier and suitable splitter cables are available from high street shops such as Dixons or Tandy.

Apart from the Movie Magic card – and the Risc PC of course – the only other thing you need is a suitable CD-Rom drive. The table gives a list of all currently available drives and whether they are white book and/or green book compatible. There will no doubt be other companies providing white/green book compatible drives in the future, but check before making any decisions.

PRODUCT SPOTLIGHT

Price: £249 (Movie Magic in a window TBA)
Supplier: Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX.
Tel: 01442 63933

● *A screenshot from Bowie – The Video Collection*

MPEG and Replay

Once you've got your CD-Rom drive and Movie Magic card fitted, how do you go about actually playing MPEG films? Well, Acorn, with great forethought, designed their Replay system to be as open-ended as possible. This in turn means that upgrading it to be able to play MPEG files is a simple case of adding a few extra files to your !ARMovie resource directory – much in the same way as you would upgrade your !System directory when installing new software.

Playing an MPEG file is just like playing a Replay file – just drag it on to the ARPlayer application and the film begins. Unlike Replay films however, the output is sent directly via the SCART cable to the attached monitor, providing better than VHS quality video with the full stereo sound.

All the controls on the ARPlayer application work as normal, so if you wanted to pause a film, for example, you just click on pause with the mouse. Jumping to another part of the film is just as simple and only requires a mouse click on a different part of ARPlayer's time bar. The latest version of ARPlayer (v.1.34) will even allow you to type in the exact position you want to jump to in a file.

Freeze frame

Because of the way the Movie Magic card is designed, it is possible to read a single frame directly from the board's frame store and drop it into any suitable application as a sprite. There is no need for any kind of digitiser as the picture is already in a format that can be interpreted by the computer – it's digital information rather

What discs can you use with the Movie Magic board?

VideoCD

Once you've got your Movie Magic card fitted, you'll probably be asking 'what can I now do with it?' Philips, the main supplier of VideoCDs, has a list of about 50 titles which can be used with the MPEG card, and there are more discs being added all the time.

The discs are split into roughly half films and half music videos – an ideal product due to the superior sound quality. Don't expect to find any obscure Bergman films (well, not yet), but you should find something watchable if you like more *popular* features such as *A Fish Called Wanda* or *Naked Gun*. VideoCD is still in its infancy so it's not surprising that Philips is concentrating on the films that did well at the box office, before moving on to the more esoteric side of cinema.

One title that deserves special mention is Coppola's stunning *Apocalypse Now* – an amazing film by any standard. With the clarity that VideoCD provides, coupled with the Dolby Surround stereo soundtrack, Apocalypse Now on VideoCD is one of the best reasons for buying a Movie Magic card.

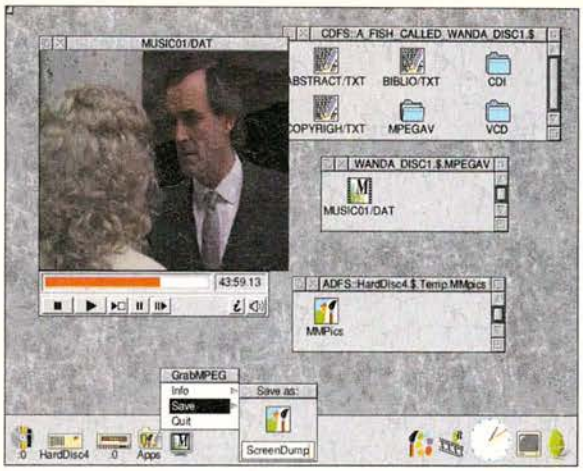
The music VideoCDs available are similarly aimed at the *average person in the street* with Queen, Kate Bush, Pink Floyd and David Bowie all making an appearance in the first batch of titles. Other publishers will soon be releasing their own VideoCDs, so the number and range of artist should increase dramatically as the medium becomes established.

CD-Rom

Perhaps a more important reason for owning a Movie Magic card – especially in an educational context – is the ability to play back MPEG films on interactive CD-Roms. Anglia TV, one of the main forces behind the plans of Online Media, is currently in the process of upgrading a number of its CD-Rom titles to dual Replay/MPEG compatibility.

Whereas you would have had to buy a specific disc depending on what kind of computer system you had, the new discs will be designed to run on any computer system. All that is needed is a relatively small driver program specific to the machine. If the computer, for example, is an Acorn machine without a Movie Magic card, it will automatically use the Replay files for film playback. If a Movie Magic card is detected in the machine, the MPEG data will be used instead.

Titles from Anglia will include the popular *Castles* and *Understanding the Body*, and other discs will follow. Other manufacturers will no doubt convert their discs in time and add new MPEG-compatible titles. The PC market is obviously an extensive source of material and there are already quite a number of MPEG disks available, all of which should work fine with the imminent PC co-processor.



● *Grabbing a frame from an MPEG movie*

than analogue.

A small application allows you to freeze any MPEG movie and grab a single frame as a 24-bit sprite. The quality of these grabbed images is surprisingly good considering that they have been compressed at a rate of around 100:1. Even better results are possible if you're prepared to spend the time *messing around* with the frames in some kind of processing package such as Spacetech's Photodesk.

While grabbing pictures of your favourite film star can have some limited appeal, the ability to grab frames from educational CD-Roms (see later) can be extremely useful and provides a valuable resource of otherwise unobtainable pictures. It's already possible to grab frames from Replay movies but MPEG films are of much better quality, hence providing clearer stills.

Should I buy one?

If you want to play VideoCDs or MPEG-encoded CD-Roms the answer has to be yes. £249 (+VAT) might sound like a lot of money just to be able to watch films from CD, especially when you consider that you could buy a decent VCR for the same amount, but VideoCDs are just like audio CDs, so you can do things such as jump instantly to any point in a track, or play back parts in any order.

Compared to MPEG cards on other systems, the Movie Magic card's price is about par for the course but will no doubt fall as the hardware to build it becomes cheaper. You do get a couple of extras with the Movie Magic card, – the SCART cable (£15 if bought separately) and a voucher for a VideoCD of your choice (another £20) – to make the package a

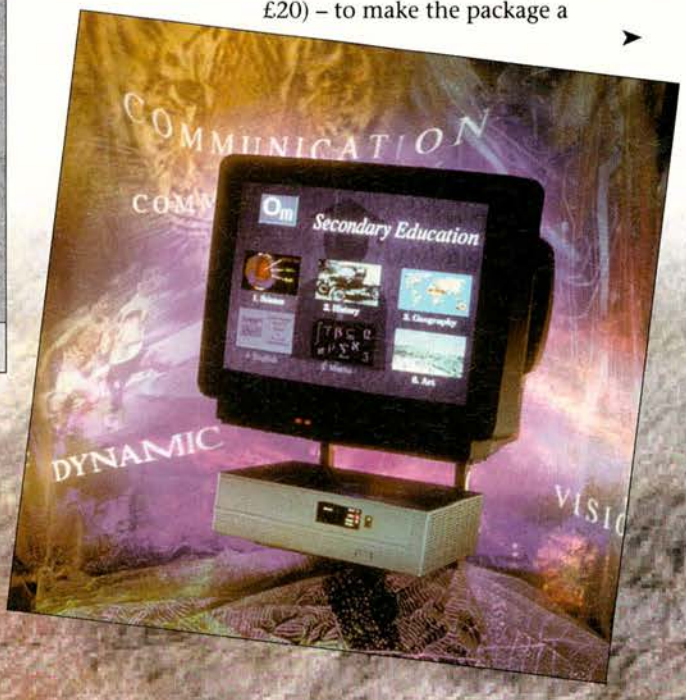
Table of White Book/Green Book compatible CD-Rom drives

● *MPEG requires CDFS 2.20 or later*

	Green Book	White Book
Cumana (01483 503121)		
Panasonic CR562 IDE style	No	Yes
Panasonic CR562 parallel	No	Yes
Panasonic CL503 SCSI	Yes	Yes
Series 600 (Sony CDU561) SCSI	Yes	Yes
Morley (0191 2576355)		
Toshiba 3401	tbd	Yes
Toshiba 3501	tbd	Yes
Toshiba 4101	tbd	Yes
Sony CDU 31A	tbd	tbd
Sony CDU 33A	tbd	tbd
Uniqueway (01222 644611)		
MediaVision CDR-H93MV	No	Yes
HCCS (0191 4870760)		
Ultimate	tbd	tbd
Computer Concepts (01442 63933)		
Pioneer	Yes	Yes

● *tbd – to be determined; the drives are being tested at the time of going to press*

● *Music VideoCDs can be watched in any order*



➤

slightly more attractive proposition.

In addition – and completely unlike other systems – MPEG support merges perfectly with the existing moving picture support via Replay, and CD-Rom software that supports both will work on machines with or without the Movie Magic card, providing MPEG or Replay as appropriate.

If you're a Risc PC owner, you are no doubt serious about how you spend your money, so the Movie Magic card should be a virtually essential purchase if you are serious about video.

The future

I've already mentioned that the current Movie Magic board can be upgraded for use with multiscan monitors as well as being able to display MPEG movies in windows on the desktop. Not only will this do away for the need for an extra monitor, but it will also allow CD-Rom producers to create disks that are more integrated, rather than having reams of text interspersed with the occasional film.

● *Queen's Greatest Flix is another classic addition*

● *A Replay information block is generated for each MPEG movie*

As the MPEG standard becomes more popular and widespread, the cost of the dedicated hardware is likely to fall in price. Rumours abound at present that domestic audio/visual manufacturers such as Philips and Sony are on the brink of including VideoCD compatibility as standard in their compact disc players without (much of) a price increase.

This will no doubt take a little time to filter through to the end user but when it does, it should mean that MPEG decoder boards should cost a lot less, and in some cases, be fitted to computer's main pcbs as standard. For the present though, the Movie Magic card provides an ideal way for Risc PC owners to dip their toes into the future of video technology.

White and Green Book formats

I've already covered a number of colour-book compact disc formats in the December issue of *Acorn Computing* and that is a good place to find out what's what. Two formats I left out were Green Book and White Book compact discs, both of which have been designed as standards for storing video and audio information.

The Green Book format was the first of the two standards to be defined and was designed specifically for discs to be used with Philips' range of CDi (or Compact Disc interactive) players. Like the XA format (see December issue), a Green Book format CD allows computer and audio data to be interleaved on the same track. The CD-i track is not shown in the table of contents which prevents standard audio CD players from playing the CDi discs.

Part of Philips' strategy when designing its CDi players was to be able to play full motion video. A small number of films were tried out on the Green Book format but the results were a little disappointing. Philips also realised that a true standard would be required if other manufacturers were to accept and promote video on compact discs. A new format – White Book – was devised and VideoCD was born.

The White Book format has been specifically designed for storing video data on compact discs and is now regarded as the standard method for this purpose. This means that you can take any compact disc that is a true VideoCD and play it on any system that adheres to the standard. Computer Concepts' Movie Magic is the first expansion card for Acorn computers to allow you to do this and there are other similar systems for other platforms such as the Reel Magic upgrade for PC compatibles and Apple Macs.

If you're thinking of buying a new CD-Rom drive for your computer, you should ensure that it is at least White Book compatible. You only really need to worry about Green Book compatibility if you already have some Green Book discs you want to access. All new VideoCDs are being produced in White Book format and most old Green Book discs are being converted to the newer format.

The accompanying table gives a list of currently available CD-Rom drives and whether they are White Book compatible, Green Book compatible, or both.

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Education unlimited

Technology in Education
BETT 95
NATIONAL HALL, OLYMPIA, LONDON
JANUARY 11-14 1995

BETT is indisputably THE education show in the UK. Pam Turnbull reports

FOR four days each January, London hosts an exhibition of the most advanced learning software and hardware in the world. This is not hype but a fact, yet as the British as a nation are essentially bad at promoting what they are good at, you will not hear that claim being made for BETT '95. If this show was in New York...

For many many years, under-funded innovation in this country has led to massive profits elsewhere. This was true in the nineteenth century with the steel and coal industries and I can see no improvement a hundred years later when it comes to IT. What has this got to do with education, apart from an impromptu history lesson?

The machines used in the majority of British schools are Acorns. The most innovative – and educationally stimulating – software is produced for Acorn machines. These are British products produced for British machines which have been leaps and bounds ahead of the PC and Apple platforms. For years, what has been missing has been the marketing and publicity clout. In the 1990s, facts do not speak for themselves.

If you don't believe me, pop over to the Microsoft stand. Take a look at Windows '95, otherwise called Chicago – does this look familiar? Well, there is an iconbar, and don't those operations look rather like RISC OS? You will hear the gasps of wonder at this operating system that comes on a CD-Rom and takes up 45Mb of hard disk space. To be fair it does have added features but this is hardly innovative – after all the original (RISC OS) was here six years ago, but in Cambridge rather than Seattle.

Still not convinced? Okay, tune into the Pentium. What a superb piece of engineering, how energy conscious, how cheap to produce, how fast, and just look at what you can do with it. Not. The technology is outmoded but it will sell and convince people to throw away other machines on marketing alone. Luckily for Intel, this cyclops of chip manufacture will sell into the PC market by inertia and momentum alone as more advanced machines (computers included) continue along the RISC road to greater efficiency, versatility and flexibility.

So at this show – which you can only look around if you're a teacher – the majority of people will be looking for Acorn machines and Acorn applications. The next time someone asks you what machine they should buy for their son/daughter, make sure they have the facts and not the hype.

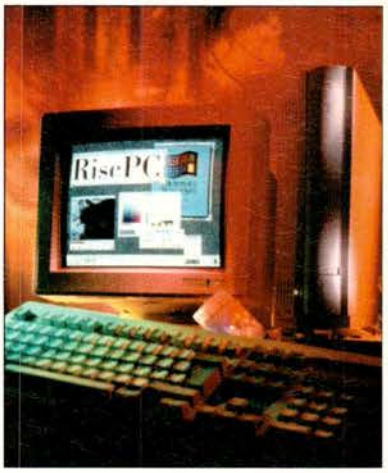
Jumping down from the soapbox, let's take a look at what is being released at this year's show.

The Acorn village – the whole school

Acorn is using the show to strengthen its links into the school and home/school markets. Using the Risc PC and Pocket Book II, Acorn plans to extend the principle of the holistic computing approach – *the whole school* – to include resources to the home, local community and information superhighway.

For those contemplating taking the plunge into the *cybersurf* of the Internet and comms, Acorn is launching a new range of products: e:mail software for internal communications and information sharing within schools, and access to the wealth of resources on the Internet and the World Wide Web. This is a chance to see how the developments of these products has progressed since the Acorn World show.

The *Acorn Universal Client* software will be available at the

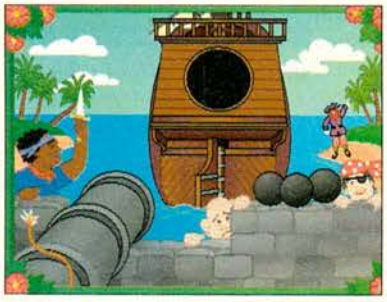


show, allowing RISC OS machines to connect to others on similar machines and to third-party servers in the PC, Unix and Apple worlds which will complement the release of Access 2 and Access+. The long-awaited IBM PC 486 card and other PC 486 cards will be there, while Online Media will also be playing its part, showing what this new technology can offer schools and homes.

Open Integrated Learning Systems (OILS) is a new acronym to add to your collection, and Acorn is working with Systems Integrated Research to port its data management system and ILS learning software to the Acorn environment. The reason for this commitment is that in the future, Acorn sees an increased use of independent and distance learning which will make it more important that appropriate information about the activity of pupils is accessible to teachers.

DTP creations

Illuminated Celtic capitals and fonts are available from MEU Cymru (01443 841790) which complement its earlier release of Celtic Patterns



and fonts. If you are working with Welsh or other modern European languages, MEU has EZAccent keyboard drivers which help when producing accented characters. It has also produced a multimedia package called *Llefarydd*. As well as listening to how Welsh is spoken, you can record your own voice and compare the two. Vocabulary is expanded and learnt as well as grammar through planned exercises.

Eric International (01903 872400) is launching its new product, BearWorks, at this year's event. Written with Key Stages 1-3 in mind, it combines a word processor and DTP package with a spreadsheet, database and graph package. All the programs are compatible with the overlay keyboard. The programs are available separately – BearWords 2, BearSheet, Bear Base – but together they cost less than £100.

A new addition to the range is *BearTime Stories*. Pictures, movement and sound combine to make stories of animal adventure written in rhyming couplets: Sadie Snake, Oliver Owl, Gerald Giraffe, Declan Ducking are some of the heroes and each pack comes with support ideas and topic work suggestions.

Apollonius PDT makes its debut with *VersaTile*. Both packages come from Oak Solutions (0113 232 6992) and Apollonius provides a fully parametric CAD package with a toolbar consisting of eight *intelligent* tools. Parametric design means you can specify relationships between elements so that when changes are made, the elements recalculate automatically.

VersaTile is a tiling and tesselation program producing tiles which can be manipulated to explore both mathematical relationships and those of shape and colour. Simple or complex tiles can be generated without the need for pre-defined grids, making it an open-ended tool useful to all ages.

Using PhotoCD to produce DTP resources is Longman Logotron (01223 425558), with the latest in its Photobase range of CD-Roms. *Decades* is an addition with scenes such as the formation of the United Nations and the first jumbo to land at Heathrow – in total 2,500 photographs illustrating the historical and images from everyday life.

Special needs

As usual there will be an area of BETT dedicated to special needs solutions in hardware and software. Northwest SEMERC (0161 627 4469) is always in pole position here and with the launch of the *SEMERC Risc PC*, this year will probably be no different.

Developed for school and home use, this special needs Risc PC comes as a plug-in-and go solution with multimedia software *Ultima* and an *Informatrix* high resolution concept keyboard and *Informax* overlay designer software. The SEMERC Risc PC has a front-end which gives 70 users access to personalised work areas and protects certain programs and files from unauthorised use.

The Risc PC has 5Mb of ram and a 210Mb hard drive, 14in screen and a pair of stereo speakers. The pre-installed software includes Full Phase+2, My World 2+2, Go Go!, Facepaint, Mini Alex plus special utilities, with extra help for physically handicapped and visually impaired children.

Ultima is new software and is a logical progression from SEMERC's Optima. As well as linking words, pictures and sounds, pictures and text can be easily placed, moved and resized.

The British Dyslexia Association (01737 765851) will be at the show with advice and information, as well as programs to help dyslexics learn and remember skills that others can pick up more easily. They will also be running seminars for a fourth year, showing how computer applications can help all ages. In one session Chris Singleton will be launching the *Humberside Early Screening Software* which is currently on trial. This package can profile a young child's cognitive strengths and weaknesses and can be used to identify dyslexia.

Staying with dyslexia is a new package from Sally Systems Limited (01628 24626). Called *Dyspell*, this won the Communications Award of The Institute for Social Inventions. Using a range of methods, its concept is similar to that of integrated learning systems. Dyspell combines graphics and animation with sound and speech. Each topic is revised and problem areas repeated, recording speed and score with results printed out in a Certificate of Achievement.

Dyspell breaks down English spelling into about 250 topics, with a tutorial which has its own bank of words and a series of progressive games. This approach aims to establish the topic in the long-term memory and to improve speed and accuracy. The games are set in three zones: Medieval, industrial and space.

For younger children there is an alphabet section with impressive shapes and sounds with associated pictures. In total there are 250 tutorials, 25 games, 5,000 digitised words and hundreds of pictures. Wordbanks can be printed in a worksheet and can be used with other subjects. For instance, Geography can be split into wordlists for Nations, Towns and so on.

Hazelnut (0850 227358) aims *Time Tables* and *Tell Time* at both special needs and mainstream primary children. Both packages are content-led and use various media to put their message across.

Widgit Software's (0926 885303) recently released *Writing Set* will be in evidence. This symbol processing and language development package splits into two: Writing with Symbols and Symbols to Sentences both aimed at Key Stages 1 and 2, as well as anyone who needs help to develop literacy skills.

Writing with Symbols encourages the creation of simple illustrated stories, while allowing those with learning difficulties to write using ➤

➤

symbols. A Resources Pack and Picture Collection with 1,700 symbols and 500 images are optional.

Symbols to Sentences develops mainstream writing skills, such as letter recognition and spelling and writing in context. Information can be input via a standard keyboard, overlay keyboard or switch.

Hardware

TechSoft (01824 780318) will be hosting a special promotion of *Roland Sketchmaster plotters*. These feature eight pens, soft pen landing, pen capping and so on and come with new standalone drivers. Prices range from £99.

Standard printers are always in demand and Integrex (0283 550880) will have its new Master and Classic colour jet printers on display. The *Colour Jet Master* is designed for schools with low running costs and is capable of printing on a wide range of media. The *Classic* is a more compact model with roll fed paper, again for low running costs and Banner printing.

Hidden away you'll find the Series CS 300 Colour Scanner. This is a high quality desktop colour scanner which gives fast mono, greyscale and 24-bit colour scans.

VTi (01243 531194) has now finished its *Printer Port Sampler* which can be used from line as well as mic inputs, making it easier to mix sound sources. Sonar comes with the sampler as well as a microphone.

Aiming to complement the sampler is *Talking Canvas Junior* which links images and sounds, is very easy to use and comes free with the Printer Port Sampler.

This is an excellent package on its own and work is under way on two advanced versions – *Talking Canvas* and *Talking Canvas Professional* – which will be released on to the Acorn market over the next two years.

More specialised is VTi's *HeartBeat*, a heart-monitoring hardware and software package developed alongside Heath Care Technology as part of its CardioSport range. A receiver plugs into the computer's serial port and a transmitter is strapped on to a belt which goes around your chest. Software records your heart information, analyses your calorific burn rate, maximum and minimum heart rate and much more. Data is output as graphs or for use in other packages.

Simnett (0181 6803830) has announced the Loyalty Bond Scheme. This means that each time a customer places an order, Bond points are allocated to a special account. These can be accumulated and used for extra discount.

Optical mark readers have really come into their own since the implementation of the National Curriculum, and Kendata (0703 869922) has now added the entry-level *ScanMark 2000* to its range. There are optional bar-code reader or double-sided heads, or a built-in interactive printer.

Science and maths

Introducing science to Key Stage 1 can be tricky but Storm Software (01935 817699) is using its friendly spaniel in a new package aimed at 4-8 year olds. *Smudge the Scientist* meets the inquisitive cat, Ceciley. Together they discover electricity, magnetism, living processes, decay, sinking and floating, as well as the seasons and weather. The idea of this is to introduce the general principles of science rather than replace essential experimentation.

For 7-8 year olds, Storm has *The Calabash Pirates* who comprise Natty Nick, Soggy Sam, Lost Luke and Dagger Jack. While on a search for gold the pirates will be rewarded as they encounter mathematical and geographical puzzles needing problem solving, decision making and planning.

Usborne Exploring Science (Physics) from the Hampshire Microtechnology Centre (01705 379443) is aimed at Key Stages 2 and 3 and uses real world illustrations from the Usborne books, Things that Move and Everyday Things. A CD-Rom resource which uses top quality graphics to introduce this subject area.

Junior Insight will be another program to makes its debut in January. For young scientists at Key Stages 2 and 3, this should make logging, analysing data and presenting it in graph format much easier. Providing an introduction to data logging, it can capture and display both continuous (analogue) or discrete (digital) data at specified sampling rates.

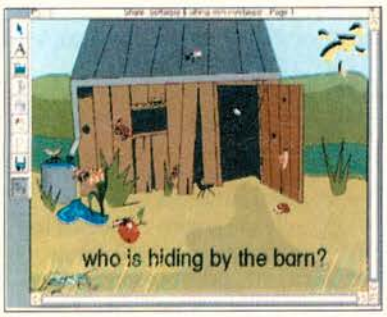
Graphs can be in table or graph format and superimposed so that the results of several experiments can be compared. Gradients of a slope or an area under a curve can be calculated and simple modelling operations are available too. An optional program is *Timing* which comes in useful when using wheeled vehicles, as it can calculate time and speed measurements of motion along the floor or down slopes.

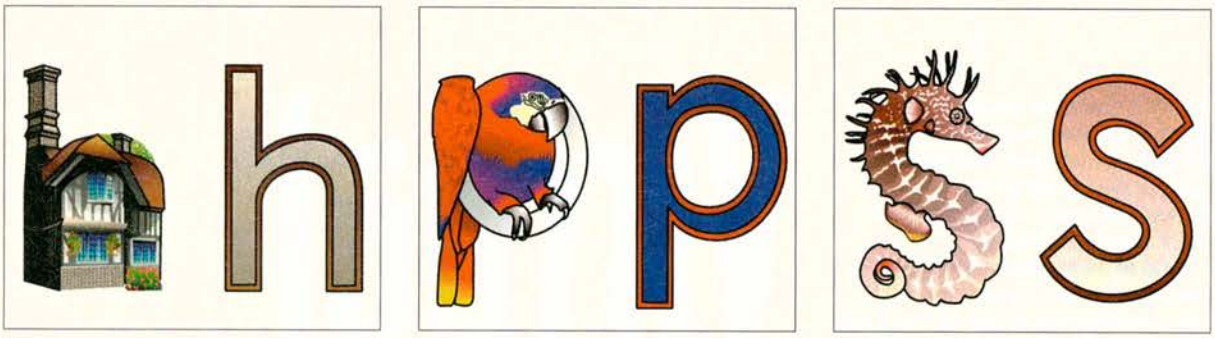
Also from Longman comes *PicturePoint* for Key Stage 1. This introduces the basic concepts of data handling. Surveys can be achieved using clicks of the mouse to count objects, data is presented graphically and when clicked the graphs speak to explain the relationship between the numbers. The topics supplied as standard are: Birthdays, favourite colours, transport, pets and weather.

Wyddfa (0286 870101) has a Key Stage 1 program called the *Talking Calculator* which is its first mathematical product and aims to make basic number skills fun.

Ecology and geography and history

New from Appian Way (0191 3731389) is the *Mentor* series of topic disks for Key Stages 3 and 4 History which provide pupils with a quick and easy way to access text and graphics history sources. Each disk contains a series of questions to focus attention on specific issues such as bias and reliability, change and continuity. Sources have background comments and a glossary and are filled with documents, photos, maps, cartoons and diagrams. Topics covered include: The Third Reich, 1914-18 The Western Front, Medieval Realm and The Coming of the Factories. More geographical is the *Animated Atlas* series. These are dynamic, moving maps relating to historical,





geographical and religious topics.

4Mation (01271 25353) has been showing tantalising glimpses of its eco-fantasy, the *Guardians of the Greenwood*, for some time and January sees its release. However, the size and amount of the graphics means that 4Mation made the decision to only release this on CD-Rom.

Following what now seems to be a trend – first started by Creative Curriculum Software – this will be available in Acorn and PC format on the same CD for Key Stages 2 and 3.

The story is this: Hawk Enterprises is a huge industrial concern gradually destroying the area of the forest known as the Greenwood. Our heroine is Crinkle and from her home on the edge of the forest she and the creatures of the forest set out to restore the Greenwood.

Drawn animations blend with PhotoCD images, with vocabulary to match. All of the 20,000+ words are sampled so you can hear the story and listen-in to the conversations. Featuring real environmental problems, Guardians explores the complex problems of the environment versus big business.

Woodland Birds is also available on CD from CCS (01422 340524) and is the first in a new series of exploring woodland habitats. Photographs, bird songs and calls, as well as text, maps and data are all included. This is primarily aimed at Key Stages 2-4.

Exploring Earth Sciences is a new CD-Rom series from the Hampshire Microtechnology Centre (01705 379443). *Glaciation* explores all aspects of ice sheets and valley glaciers, erosion and deposition needed fro GCSE and A-Level work.

Reading and writing

The Talking Technology developed by Sherston Software (01666 840433) has been used very successfully in its recent products. The third in the series of Oxford Reading Tree Talking Stories will be available in January featuring the voice of actor Richard Briers. This will feature the tales of: *Floppy's Bath, The Baby Sitter, The Water Fight, Kipper's Balloon, Spots and Kipper's Birthday*. Using the same technology, it has redesigned its popular BBC B title, The Animated Alphabet. The alphabet can now be taught with digitised sound, animation and morphed graphics to produce *The All New Talking Animated Alphabet*. This comes as three games dealing with visual and aural letter discrimination as well as letter recognition.

Each letter transforms into a similar shaped character or object that starts with the same initial sound, therefore providing young children with a strong visual and aural association to the letter shape and sound. The package is complemented by useful tips about teaching young children the alphabet and full colour illustrations for every letter of the alphabet to use to create a wall frieze.

Aimed at the same age group is Creative Curriculum Software's (01422 340524) *Spelling Book*. This can be used alongside a word processor to help with the learning of spellings and contains three word games.

The *Maths CD* is targeted at secondary schools and is an interactive CD covering shape, volume, area and mass. As with all CCS CDs it is dual format and this one comes with a range of teaching and support materials.

For foreign language work, *Conjuguez* has been revitalised and is available in three forms: GCSE level has 500 French verbs, A Level 3,500 and for education establishments it has the facility to add more verbs.

If you are interested in interactive multimedia books, BETT '95 is a good place to see what is available. Longman Logotron's (01223 425558) offering is called *Rainbow* which is designed to help with the developments of writing, language and object recognition skills. Pictures, animation and video images can be combined and scripted with text, speech, music and sounds. Rainbow has already been used by teachers to create interactive workbooks to support the Longman Book Project.

Minerva (01392 437756) is also addressing this market with the latest in its Prime series – *PrimeStories*. This is a new concept to address the market of *multimedia for the terrified*.

Teachers only

Trip is a package which will find a home with anyone planning a school outing. This simple package makes the organisation easier, with facilities such as processing pupil payments. The official launch of *MathsGen* is also in January. This program generates printed worksheets and answers for addition, subtraction, division and multiplication. Both products come from Creative Curriculum Software (01422 340524).

Hampshire Microtechnology Centre (01705 378266) has produced *The Planning Guide to School Development* which is an interactive program to help manage the development of a school. Advice, reference information and activities combine to help anyone developing a department, year group or whole school. In addition it contains advice about Ofsted Inspection with guidelines, checklists and notes to help plan for Inspection

Virtual sex

...and the single sheep. Michael Rozdoba investigates.

HAVE you ever bothered to read this column before? I thought not. Which just goes to show what a depraved person you are. Go on, clear off, we don't want your sort round here.

And to all regular readers, just in case you haven't figured it out yet, this headline was a ruse to weed out any potentially corrupting individuals who may try to infiltrate our readership. I'm afraid there will be no actual sex in this issue – only wholesome 32-bit programming – though next month... Well, you never know, so perhaps you'd better reserve your copy now.

Alarming tasks

James Aylett has pointed out what looks like a crippling bug in one aspect of !Alarm. Tasks should be able to set and receive alarms using the wimp messaging system (PRM 3-243). However, there seems to be a fault in Alarm's Basic !RunImage file – within the RISC OS 3.1 !Alarm module, version 2.37 24 Apr 1992 – which prevents Message_AlarmSet being processed correctly.

I find it hard to believe that such a bug could have gone unnoticed for so long. Surely there are some applications out in the real world which have tried to use this feature and encountered the problem before? Or have I perhaps just failed to notice other reports of this bug? If anyone can clarify this, I'd be grateful.

You can see the troubled code in action by loading the !Alarm application and then running SetTskAlm, a short Basic program to be found on the MegaDisk. This should set an alarm for 1996. If for any reason it works, running RemTskAlm will cancel it – however I'll be surprised if you get that far.

When SetTskAlm is run, !Alarm responds with *Unexpected error :- Unknown or missing variable (5400)*, refusing to set the alarm. If you load *Resources:$.Resources.Alarm.!RunImage* into an editor that can handle Basic, such as !Edit, or better still the PD !Zap, take a look at the code around line 5400 inside procedure Ab, which sets the task alarm time – the listing is numbered in steps of five, so take that into account if you renumber it upon loading.

It isn't easy to read as it's been compacted, however we can deduce a few things.

As described by James, this code contains references to the variable *dd%*, but seems to ignore *od%* once assigned a value. However, *dd%* looks like it will be undefined at that point, whereas *od%* contains a relevant value – the minutes component of the alarm time. This suggests a typographical bug in the writing of the source !RunImage program – that in fact the reference to *dd%* should actually be to *od%*.

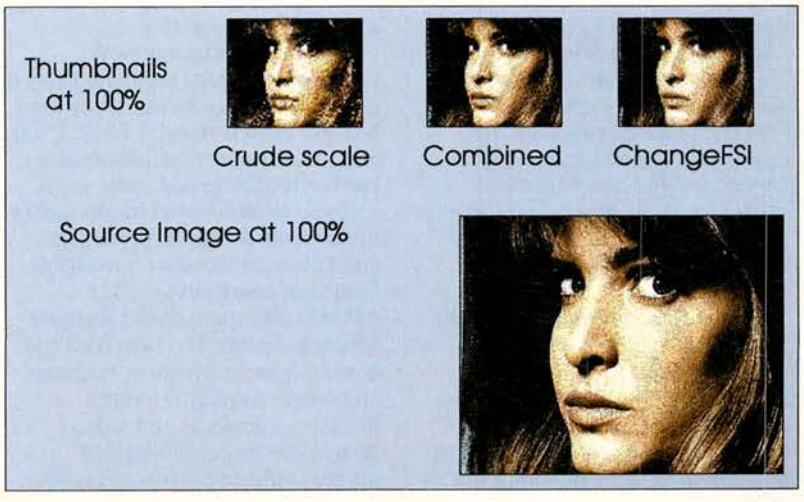
We can correct this by modifying the !Alarm module which contains the resources files. Load the module from rom into a suitable byte editor – again !Zap is recommended, as it can both grab & edit the data. Ensuring your copy is version 2.37, locate the byte at offset &7ba3 & change it from &64 to &6f. Save the module to disk and then load it into the RMA. Check the resources !RunImage file, line 5400, to make sure it has changed as expected – the section *d%!zb%=dd%* should have become *d%!zb%=od%*.

Finally quit and reload the !Alarm application to utilise the newly altered !RunImage, then try running SetTaskAlm again. You should find it works okay.

Fortunately, an official new release of Alarm (v2.61) should now be available to all users, along with updated versions of some of the other RISC OS 3 bundled applications, on disk from Acorn dealers. However, I don't yet know if this latest version fixes the Message_AlarmSet bug.

If it doesn't and you require a corrected version which is distributable along with your own applications, you'll have to lobby Acorn directly. Alternatively, you could always perform some open chip surgery direct on your RISC OS roms, with the aid of a chisel...

As an afterword, if you don't have a copy of !Zap, the excellent but badly described *text* editor – it can handle Basic, C & assembler source, raw data and even code, as well as text of course – you should be able to pick up the latest version from: The Archimedes Public Domain



Library, 39 Knighton Park Road, Sydenham, London SE26 5RN.

Oh, before I forget, one last note for James' benefit – the bytes in the 16-bit year within an Alarm message must be to mod 256, not 100. So 1994 is stored as (202, 7) & not (94, 19).

Well thumbed

Think of any application which provides a display of a collection of sprites, using thumbnail sized copies, such as Paint with its *Sprite file window*.

Have you noticed how with such applications, these thumbnails are usually rendered using a simple crude scaled plot of the source image? This loses much detail, typically producing an unattractive or possibly even unintelligible picture – hardly surprising since the crude scaling is achieved using a point sample of the source.

A better means of constructing such thumbnails is to build each from the source sprite using an averaging process to reduce its size, preferably incorporating error diffusion – much as ChangeFSI processes images. At first thought, you might conclude this would involve a lot of complex code which would take an age to write and even longer to execute.

Strictly speaking you'd probably be right, however there is a way around this if we compromise. The crucial averaging and error diffusion code can be made very simple by reducing the range of conditions that it has to work with. If we stick to using palette-less 8-bit per pixel sprites for thumbnails, this will simplify our code. Furthermore, since producing a thumbnail in any case will discard considerable information, we can use a simple scaled sprite plot to convert the source image to one which is, say, four times the width and height of the final thumbnail.

This step can additionally be used to convert the source image to an 8bpp one. That leaves the custom averaging and error diffusion code the much simplified task of converting an 8bpp image to a similar sprite of precisely one quarter the dimensions.

As these constraints make the process less complex, it should be easier to code and faster to execute, and in case you're thinking this somewhat convoluted combined process, of simple scaling followed by a more sophisticated averaging, will produce thumbnails little better than a simple scaling alone, here's an example of how the various methods compare.

I think you'll agree that the thumbnail produced with this technique is at least as good as the ChangeFSIed one. To put such a method into practice, you'll need some temporary workspace to store the intermediate sprite of four times the dimensions of the biggest thumbnail.

The intermediate sprite can be built using ColourTrans and the usual OS_SpriteOp, via redirection of output and scaled sprite plotting with a suitable translation table.

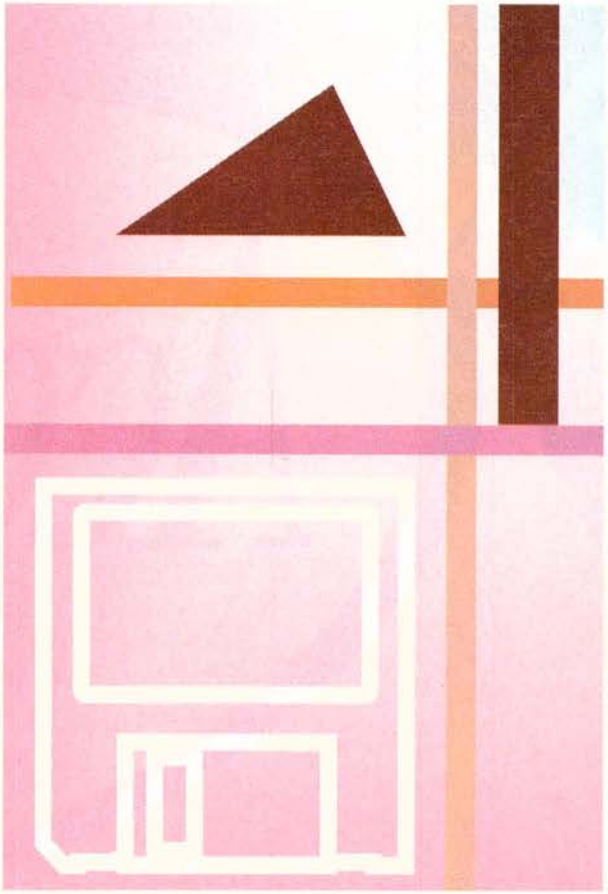
The custom bit twiddling code then has to carry out the following procedure. Scan the intermediate sprite's bit map from top left to bottom right, in strips four rows wide. For each four by four group of pixels, convert their colour numbers to 24-bit – using the image's palette. Sum each of the red, green and blue components and then divide by 16, to give the average 24-bit colour for that block.

If the pixel being processed isn't on the top row or left hand column, there will be pixels above and to its left which have already been processed. An error term will have been calculated and stored for each of these.

Add in 3/8ths of the error for the pixels directly above and to the left, and 1/4 of the error for the pixel to the above left. Find the nearest available colour to this desired 24-bit value – I usually use a 12 or 15-bit look-up table, precomputed with ColourTrans, to do this. Write the colour number found here into the corresponding thumbnail pixel.

Now to find this pixel's error term, look up the 24-bit value for the colour just written to the thumbnail and subtract it, RGB component by component, from the desired value. This should give you three signed numbers – the error term – which must be buffered somewhere so that it can be read when computing the colours of the pixels below and to the right.

A line buffer would suffice, however, as the four by four block of pixels we've averaged are no longer needed and are part of our transient intermediate sprite, so the error term can be written over them. The whole procedure then repeats



with the next four by four block of pixels, within the intermediate image, until all have been processed.

One last tip. You might find that in certain circumstances error terms accumulate and lead to colours *bleeding* several pixels deep across boundaries between distinct sections of the source image. This can happen if the source image has a palette different to the default used by the thumbnail.

In such a situation try clipping all errors to lie within a given range say, -127 to +127. This also has the benefit that the error term, then being only 24-bits wide, will fit into one word of store should you opt to use a line buffer, rather than overwrite the intermediate sprite image.

If you come up with any improvements to this process, some interesting uses or have any other comments to make, write in and let TechForum know about them. You'll find a simple application which demonstrates this procedure on the MegaDisk, along with a few further notes.

Stop me, buy one!

Don't forget, 42 may be the answer, but we have yet to discover the questions. If you have a question, it is your duty to society to write in, so do it NOW.

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First and foremost

John Thorpe assesses the usability of statistical analyses on the Acorn platform

HOW often have you needed to carry out a tricky bit of statistical analysis of some massive data set? Not very often, probably, but if you do need to use statistics and you have an Acorn computer you only have one commercial statistics package to choose. This package is 1st – with cut-down versions 1st Junior and 1st L – and it provides a very comprehensive set of facilities to any statistician who might use it.

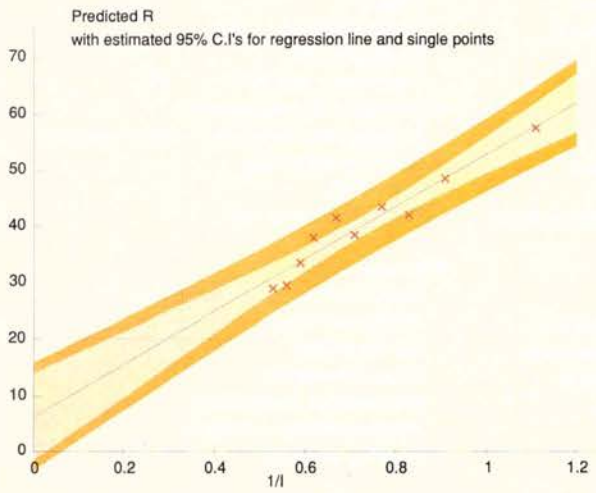
1st is the latest of a family of packages which has been available on Acorn computers since the BBC Micro, but it is only recently that it has been made fully RISC OS compatible and it now runs on the Desktop in windows.

The first impression one has of running 1st is one of good quality programming. Clicking on the sprite brings up a menu window from which the next operations to be performed are chosen. This menu changes with the current action so that the options in a statistical analysis are presented to the user at the right time as the analysis proceeds. Best of all is the presentation of the graphics produced by an analysis. These are detailed and full of information, are clearly drafted and can be exported as draw files for further amendment and inclusion in documents.

The range of analyses covered by the package is comprehensive, covering everything from mean and standard deviation to hypothesis tests, curve fitting and cluster analysis. There is far too much to describe in a review but Table I gives a list of most of the analyses available. The only major area that the package does not cover is Box-Jenkins analysis of time series.

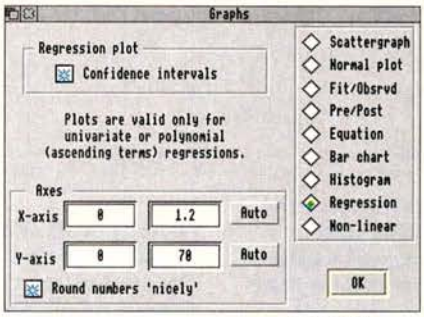
The best way to give a flavour of the way in which 1st works is to go through the steps of a simple analysis. The example I have chosen is of an analysis that might be carried out as part of a school science experiment. The data is actually stolen from a student's practical book and concerns the relationship between the current flowing through a coil and the radius of curvature of an electron beam passing through that coil. The radius of curvature of the electron beam should be proportional to the reciprocal of the current in the coil, so a plot of the curvature of the beam against 1/(Current) should be a straight line through the origin.

I typed the experimental results into Pipedream 4, used this to generate a 1/I column and saved it as a CSV file. I then imported this into 1st. I could have typed in the data and carried out the transformations using 1st if I had wished, but I find the ability to take in a CSV file from another package with ease fairly impressive.



● *Select the variables and the kind of plot to be produced, together with the scale on the axes of the graph*

Statisticians call curve-fitting *Regression*. To carry out the regression, click on the 1st icon to produce a menu and then click on the Regression option. A dialogue box appears to let you select the dependent and independent variables – several independent variables can be selected for multiple linear regression.



● *Clicking on OK starts the calculation, resulting in a window with the details of the fitted function*

1st then displays a Linear Regression dialogue box which allows the choice of all sorts of options including non-linear regression, where any specified function can be fitted – very dangerous if you don't know what you're doing – weighted regression and regression through the origin. Clicking on OK starts the calculation and in next to no time a window opens with details of the fitted function.

You can save these regression details as a text file if you want. By selecting the Plot regression on the menu it is now possible to produce a graph showing the points and the line through them.

Again, there is a dialogue box to select the variables and the kind of plot to be produced, together with ➤

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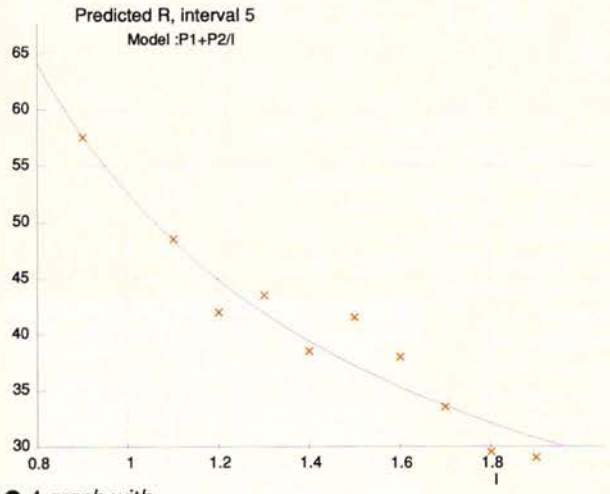
the scale on the axes of the graph.

The graph is as good as one could possibly expect, giving confidence intervals for the line and the points as well as the regression line itself. Unfortunately, the experimental technique of the student who provided the data was not as good and the content of the plot is fairly crummy. The graph is given in Figure IV and you can save this sort of output as a draw file.

I tested the package on an old A310 computer, a more modern A5000 and on a Risc PC. It worked perfectly on all of them and required considerably less than 640k to run. The exact memory requirement depends on the size of the worksheet involved – 20 variables and 200 values for each required 384k.



● *A graph with confidence intervals for the line and the points as well as the regression line itself*

The calculations I ran on it were acceptably fast – the data sets involved had 20 variables and 669 observations for each. One of my colleagues reports a longer processing time – minutes in some cases – on some of his data set, but there were, however, some two and a half thousand observations for each of his variables.

Pros and cons

So am I completely enthusiastic about all aspects of the package? Well, not entirely. I like the ease of use of the package, the way it produces output that I can incorporate into other reports, and especially the graphics, but I have strong reservations about the manual.

Writing a manual for a statistics package is not easy. If the author isn't careful he has to teach the whole of statistics to his reader and that makes for a very large manual indeed. However, having said that, I feel that the printed manual provided with 1st, with its 40 A5 pages, is a little cryptic. Many of the kinds of analysis that can be carried out by the package are not mentioned in it at all, and there are some vital features of the package which are so well hidden that I still haven't found them.

For example, one of the most useful thing to do after fitting a line to some data points is to examine the difference between the values predicted by the line and the actual values (these are called residuals). These are hidden away in the data sheet, and you can only find them by holding down Shift when you click Menu over the relevant box, something which isn't obvious and something which I still haven't found in the printed manual.

There is another manual on the disk. This is interactive and will spring into action whenever you do something, placing a page of help relevant on the screen for whatever you are doing. Unfortunately, this manual often covers up the menu or dialogue box on which you are working so that you can't see what your mouse is pointing at, and some of the dialogues won't let you move the mouse out of them.

This means that for some dialogues you can't close the help window which has opened, unbidden, with the dialogue and which is completely obscuring it. Fortunately the author is very understanding and will give help over the telephone, but I can't help feeling that he would have far fewer interruptions of his valuable time if the manual was a little clearer.

● *The Linear Regression dialogue box allows the choice of all sorts of options including non-linear regression, weighted regression and regression through the origin*

A final reservation concerns the lack of a log window which would record all the operations carried out as part of a statistical analysis. This is vital to students learning to cope with statistics and useful to the professional. There is nothing worse than getting on site, well away from your trusty computer and finding that the crucial analysis you carried out yesterday has somehow escaped being saved to your final report.

Summing up

1st is a first-rate package which holds up well to competition from packages on other platforms. It would be an excellent tool for the professional statistician who is carrying out a statistical study in industry or as part of research. I have my doubts about its use in education, especially at schools, partly because of the poor manual and partly because of the lack of a log.

● *John Thorpe is a Senior Lecturer in Mathematics at Manchester Metropolitan University.*

Table 1 – Some of the facilities in 1st

Simple Statistics
- Descriptive Statistics
- Percentiles
- Box-Whisker Plot
- Confidence Intervals
- Weibull distribution fit
- Outlier analysis
- Normal plot
- histogram

Multivariate Statistics
- Correlation Matrix
- Principal component analysis
- Cluster analysis

Regression
- Simple linear regression
- Multiple linear regression
- Non-linear regression
- Jacknife estimates
- Scattergram
- Regression plots

Hypothesis tests
- Student's t test (many variants)
- 1, 2 and 3 way Analysis of variance
- Chisquare tests (including contingency tables)
- Mann-Whitney U test
- Kruskal Wallis
- Friedman's ANOVA
- Wilcoxon signed rank test
- Kolmogorov/Smirnov (1 and 2 sample)
- Spearman/Kendal
- Runs Test
- Wald/Wolfowitz test

Miscellaneous
- Kaplan-Meier survival analysis
- McNemar's test
- Contour plots
- Cross tabulation
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Cybersurfing in art and design

Steve Bruntlett looks at Mosaic as a visual resource for art and design education

The Internet seems to be able to provide increasingly unlimited resources, certainly of text-based information, but there is also a steady rise of visual resources, some of which are useful and some which may be questionable on a variety of moral, aesthetic or educational grounds.

The Digital Picture Archive in Delft is a case in point. It has sections for all kinds of fabulous pictures in such section as cars, flowers, animals, with the last being pornography. Is it appropriate to put that kind of resource on-line in a classroom? I doubt it, but how could access to such flawed resources be organised in a classroom situation? It's probably better to avoid them altogether but how can schools ensure that children or students don't gain access to such resources without them having to be closely monitored all the time?

There seems to a contradiction here between open access to resources and resources that children should never have open access to in a million years. This may not be resolvable but someone may have suggestions as to how such resources can be approached, perhaps by restricting access through a particular education server such as that of ULTRALAB, rather than the full World Wide Web server.

Serving the wider community

If you're only just becoming familiar with the Internet you may not yet have heard of Mosaic. Mosaic runs on most of the main computer platforms and may be described as a multimedia front-end for Internet. The race is on to see which company in the Acorn community will come up with the RISC OS answer to Mosaic first.

Mosaic includes text, sound, still and moving images and can be navigated using menus, icons or hyperlinks. Hyperlinks are key words embedded in the text, usually in a different colour and underlined, which, when selected, take the viewer to a further page which may comprise more text, a gallery of images or a combination of both.

It is distributed through NCSA at the University of Urbana-Champagne and is accessed primarily through the World Wide Web at Cern which is referred to as the *Web* or W3. Users don't generally need to know how the system works or through which computers or telecommunications systems the information is routed, just that when they ask for information the system works out the best way of delivering whatever information is required at the cost of a local phone call.

Pictures can be triggered by clicking on them which in turn loads them into an appropriate utility program provided as part of the system. The display is still fairly linear and is presented in a fairly static format, though this will hopefully change as users get to grips with developing the design of Mosaic pages, which at the moment involves editing complicated scripts.

For example, if the Le WebLouvre exhibit is accessed – http://mistral.enst.fr:80/~pioch/louvre/paintings.html – which, incidentally, has nothing to do with the *real* Louvre Museum – images and text can be seen as well as suggestions of what else is available. The artwork available is listed under art movements and individual artists. Selected pictures can be loaded into a viewer and saved on to disk for further reference if longer-term storage is necessary.

Other gallery exhibits such as the Krannert and Michael C. Carlos Museums display the exhibits in galleries, which seems reasonable, but perhaps shows that users need familiar ways of navigating and keeping track of rapidly increasing amounts of information.

There are services provided such as subject-specific servers which are accessed from the main index. Records in the form of a hotlist can also be maintained which gives access to favourite or most-used Mosaic resources. The Art server lists some of the resources for art and design such as the 911 Gallery, The Electric Gallery, the ART TOWER MITO Contemporary Art Center (sic) in Japan, but often the most useful resources are found elsewhere by looking at What's New lists and by thinking laterally or just by exploring the web.

Mosaic resources all have an *http* address by which they can be accessed directly. Some of these addresses are given after references to specific resources used in this article.

Anytime, anywhere

There are arguments about whether such images are as useful or as high quality as printed resources. There is also the view that it's better to look at original artwork but in an increasing amount of cases the original images can't be seen even if the journey to Paris or Amsterdam was affordable.

Availability is a key word in the context of accessing and using museum and gallery resources. For example, the medieval manuscript illustrations from Les Tres Riches Heures du Duc de Berry which are kept in the Chantilly Museum in France are no longer available to the general public, and may not even be available to scholars or researchers for

much longer. There are research programs being undertaken such as the Cornell/Xerox Brittle Books, Electronic Chaucer and The Canterbury Tales projects for example, which will make available manuscripts, printed books, documents and art work in digital form before the originals are stored for conservation purposes.

The only access available now for many manuscripts is through facsimile reproduction or digitally-scanned archive versions. So the argument that it's better to see the originals may be true in some cases but in many other cases the only way to see them is through Mosaic via the Internet.

Quality or quantity

So what's the image quality like? Well there are specifications as to recommended resolutions in which art work should be scanned but generally it's up to the provider of the images. The images displayed on the Mosaic screen are generally small thumbnail 8-bit colour images.

If there's a blue outline round an image then it can be clicked on to produce a a full 24-bit colour image which will be loaded into an external viewer for the user to look at or in more detail or, much more excitingly, save or cut from the screen for use in a paint or DTP program or for later use as reference resource material.

ChangeFSI can be used to convert 24-bit images to other modes. The manuscript illustration from the Vatican Library exhibition shows the kind of visual resources which are available for the price of a local telephone call. Wherever resources are accessed, whether they be Cardiff or California, the cost is the same, though it takes longer to get through after about 11.00am once users in America begin to use Internet.

Perhaps this leaves Mosaic as no more than a giant clip-art collection unless such images are developed into or augmented with teaching and learning materials. Teachers should not only be able to develop new electronic materials which rely on a combination of images and resources provided by universities and museums but much more excitingly, become involved in developing their own resources for other Mosaic users.

For example, critical studies projects could be set up which not only compared prints by the same artists in national or private collections but which also compared a range of printmaking techniques and which offered a series of practical exercises so that students could gain new insights into printmaking techniques. On the other hand a GCSE or A-level exhibition could be put on to the Web for international review and critical analysis by artists, teachers and pupils. Mosaic could prove to be an excellent resource for AT2.

Mosaic resources are being provided at a rapidly increasing rate. One week, The Mosaic What's New list allowed users to choose from dozens of applications such as an Elvis Presley exhibit with photographs, songs and memorabilia, the beginnings of a Natural History Museum resource service, an interactive frog dissection kit and a sensitive map of Switzerland.

Is any of this stuff any use? Well, judging by the home page of the Australian University or the Library of Congress it seems to be. There are some simply fascinating resources out there waiting to be discovered, such as the Library of Congress' American Memory Project.

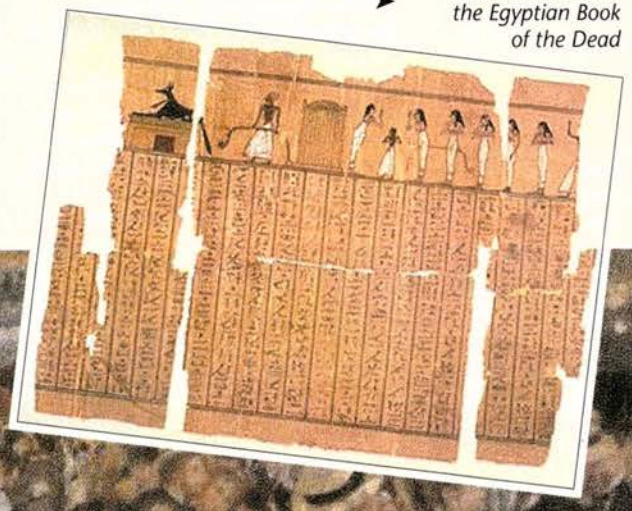
Putting resources to work

Certainly, Mosaic resources can be used in resource-based art and design and critical studies. The use of such resources could help develop the comparison of artefacts, paintings, prints and so on such as those from the Australian National University Print Workshop. Although these are currently just lists of prints, there is potential to take the resource a stage further – the production of worksheets to go with prints and suggestions about where similar prints may be found in other collections.

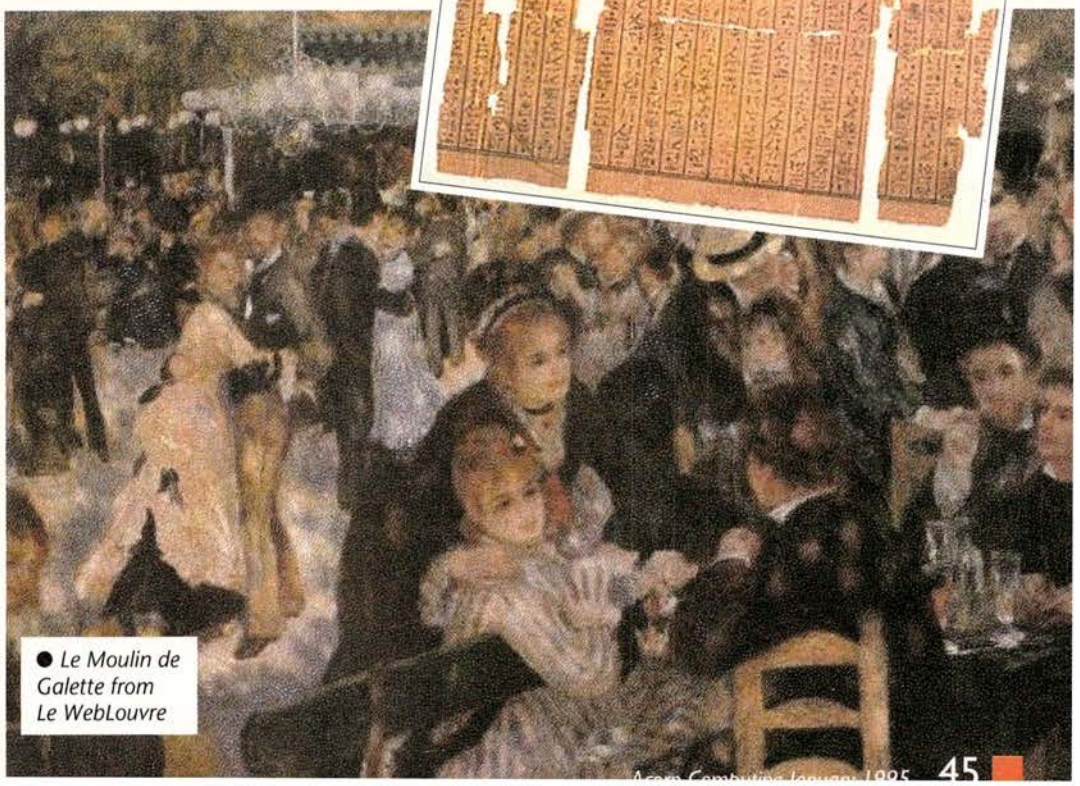
The interactive student tutorial on the history of prints was produced as part of the Images for Art History Project at the Australian National University – http://www.ncsa.uiuc.edu/SDG/Experimental/anu-art-history/home.html – where sections of prints by Beham, Castiglione, Degas, Hogarth, Durer, Matisse, Canaletto, Kollwitz, Piranesi, Van Dyck, Rembrandt and Gericault owned by the Australian National Gallery, but not necessarily on show, have been enlarged so that the user can see examples of individual artist's techniques.

There is also the possibility of new prints being documented as they are created so that students can see the process from start to finish from a *better* standpoint than looking over the artist's shoulder by using time-lapse and close-up photography. Artists could also talk about their work or appear on film working on particular aspects of print production.

The Australian resources also offer comparison of contemporary architecture in Hong Kong with Roman architecture as part of the Architecture and Architectural Sculpture in the Mediterranean Basin



● *Section of the manuscript roll of the Egyptian Book of the Dead*



● *Le Moulin de Galette from Le WebLouvre*

➤

exhibit. This is a rich vein for comparative critical studies in art and design.

Accessing the information

If Mosaic can provide unlimited resources, where would an art and design teacher start? How would they find out what's available and what might they look for had they a particular interest or requirement? One of the main problems with Mosaic is the co-ordination of what's available.

ULTRALAB at East Anglia Polytechnic University – no, that's not a misprint – are starting a service for schools and parents, but there is a need for someone to take a lead in monitoring art and design resources, perhaps the NSEAD, and coordinating and developing new material with and for schools and colleges.

It seems perverse that art and design education sometimes seems to be so far behind in what is essentially a visually-oriented world. If teaching and learning resources needed to develop the art and design curriculum could list what would be included?

The range of art and design disciplines is very broad but teaching in such areas as painting, printmaking, drawing, illustration, graphic design, packaging design, textile design, photography and ceramics could be greatly enriched by the provision of examples for reference and resource purposes which may not otherwise be available in the quality and quantities necessary.

The quality of these examples is perhaps crucial to their effective use in the art room, as is the way they are used. It would be no use viewing high quality 24-bit colour images on a monochrome screen or printing such images on a dot-matrix printer for example. The hardware in the classroom has to be matched to both the quality of the resources as provided and also to their use in the classroom. This perhaps requires a higher specification of equipment at additional cost.

The presently limited use of computers in some art rooms arguably needs to move on from the production of images to the development of resources and their management, as well as in their role in providing expert systems and in their use for a wide range of teaching purposes.

New, annual fixed-fee payment arrangements for school and college connection to the net are being developed by telecommunications companies and other more long-term schemes will hopefully ensure that schools have unlimited access to massive amounts of visual information at low annual cost.

As a result of such arrangements, the work produced on computers would not be restricted to *painting* or *drawing* as is the case in many schools, but could rapidly develop into multimedia-based artwork focussing on newly developed aspects of critical studies as well as into more interactive forms of internationally-based collaborative artwork.

Sharing work and resources

Visual imagery need no longer be located in one particular school. If GCSE and A level exhibitions were made available through a local University home page, it could be informed by the positive criticism of other Internet users accessing that home page, who may not necessarily be art students or teachers.

As the number of pupils having access to the Internet increases, there may be the possibility of them working at home and communicating directly with their teacher, or even more radically, with any other art teachers or artists hooked up to Internet. Do the lessening differences between the method of art production and its communication on the Internet make it easier for this type of communication to take place? Does the ease of communication in art and design criticism open it up to people who wouldn't normally be involved in the process and does the possibility exist of breaking down the barriers between *school art* and *real art*?

Would such integrated methods of working and communication open up the possibility of postgraduate artists or designers taking on a given number of Internet apprentices under schemes run by the Royal College of Art for example? It would certainly make it comparatively easy for students to collaborate on work with other students or artists working in such groupings as the New Brunswick Arts Group which comprises metal-workers, sculptors, jewellers and textile designers.

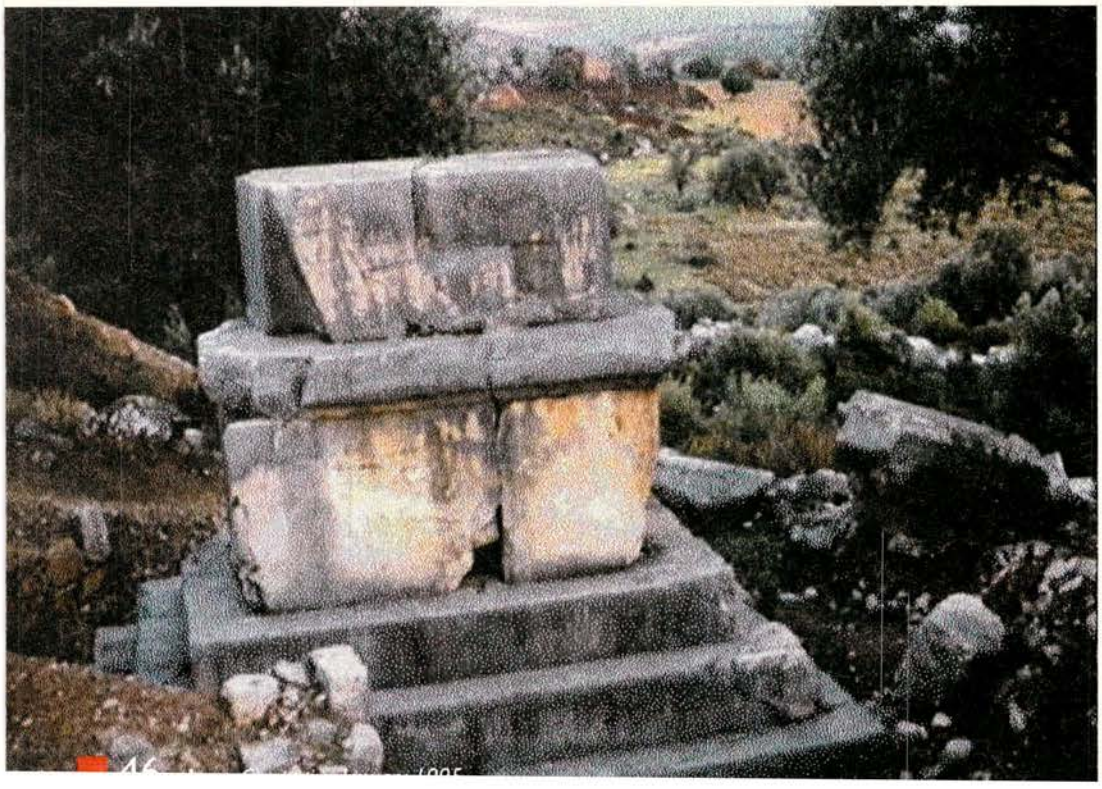
Future perfect or imperfect

When trying to determine what may be the future role of Internet/Mosaic in helping develop the art and design curriculum, it may be useful to determine which current art activities are becoming increasingly difficult to undertake because of a lack of, or decline in, the provision of, resources.

What range of lessons could take place if teachers had new kinds of resources or at least bring back resources similar to the ones art departments used to have? What is currently difficult or impossible to teach in art that would be possible with access to unlimited visual resources, and how would teachers use such resources?

Would teachers make use of online access to art galleries and museums

● *Architecture in the Mediterranean basin*



around the world, such as the Library of Congress and the Krannert Museum, for critical studies projects or for art and design history in a live classroom situation, or would it be for use as a background resource?

This has implications for the development of new teaching and learning strategies as the computer would seem to be taking over from the teacher as the information provider, leaving the teacher acting more as a consultant. Perhaps the teacher's role becomes that of a gatekeeper.

This is partly the view of the inventor of Logo, Seymour Papert, who sees the role of schools as providers of pupils' access to the computer as a knowledge machine without restrictions of location or timetables, but being able to tap into resources wherever and whenever appropriate, developing their own learning contexts and their own peer-learning support group on an international basis.

Trial runs

The preferred model for Project Connect run at De Montfort University on behalf of TOSCA is where the University acts as a gateway to the Internet, by being a central holder of resource information, for the six schools involved in the project. Using Mosaic may be a better way for art teachers to access visual information on the net rather than having to load images and text from Internet sources into separate display programs.

Certainly, it would be a more intuitive way of visual communication between art and design teachers. It would also be a useful way of pupils or students communicating with each other worldwide on a range of art projects. One of the most exciting prospects would be the visual interaction between practising artists and pupils working on common themes and projects.

If the coke machine at Berkeley can be *fingered* to determine stock temperature and quantities available, why couldn't work being produced on an on-line section of Richard Hamilton's digital collage editing suite be similarly accessed, enabling Internet users to take part in collaborative artwork on the same basis as they would take part in a MUD game?

In relating such potential developments to current practice, it would seem that if students are producing sketchbooks for jewellery courses, as they currently do in one sixth form college in Leicester, then with digital jewellery and ceramics imagery becoming available from the V&A Digital Slide Library and natural history resources becoming available from the Natural History Museum, there is the potential for some very powerful design work.

Such work could be produced with computers to design jewellery or ceramics and model surface textures and lighting effects before pieces have been brought into production. Multimedia could be used to show the production of such work from beginning to end as a replacement for, or supplement to, the conventional sketchbook. Virtual jewellery or ceramic design may be possible for schools without workshops and kilns, just as digital photography is available for schools without darkrooms!

Here and now

If all this sounds complicated, it needn't. The technology exists to produce the text and images and should be familiar to anyone developing *conventional* multimedia applications. The most complicated part of the process is using the Mosaic script language to put the application together and finding someone with the resources to make the information available to users, perhaps through a University *home page* which is the kind of thing we'd like to develop at De Montfort University for some of the Leicestershire schools as part of Project Connect.

Perhaps the key to the success of the use of Mosaic as an educational teaching and learning tool is in the development of a schools' ability to author materials for Mosaic users rather than schools being provided for by other agencies. Schools need to contribute to developing multimedia resources rather than be seen as end-users all the time. This may be achieved by them developing working relationships with Universities to provide such resources, given that there is provision of appropriate equipment to make such relationships possible.

With respect to appropriate equipment, it is certain that what art and design teachers need to develop such resources is a computer which has excellent graphics facilities and software which can be used intuitively within a multitasking desktop.

The Risc PC is such a machine and is ideally suited to run Mosaic as it can access resources at high speed and transfer selected images and visual resources into the existing range of sophisticated painting, drawing and editing software which is available on the new computer, as well as existing Acorn computers.

● *An illustration produced with Pro-Artisan 24 using Mosaic resources*

Using packages such as Pro-Art24, Revelation ImagePro24 and Genesis Professional will provide the high quality platform on which sophisticated artwork can be produced by pupils and students in schools and colleges, though new instruments for assessment and evaluation may need to be developed to take account of necessarily different working procedures.

The Mosaic equivalent, the Acorn Computing (no relation – *Ed*) Group WWW Service via ISDN, is planned to work on most Acorn computers and once on line, it is rumoured, will offer a more sophisticated service than the standard PC and Mac versions of Mosaic. Images can be downloaded from Internet or Mosaic, worked on and uploaded for others to use, though this has implications for copyright and the acknowledgement of the use of other users' work. Pupils can continue to use familiar packages and also continue to work in the very intuitive way offered by Acorn computers.

Summing up

We need to move on from the view of the Internet as a monolithic image/text/data bank, and after a period of evaluating its resources must begin to develop new educational models available only through the use of telecommunications. We need to expand our current equipment-based view of IT to that of a view of New Information Communications Technologies (NICT) which sets the scene for the development of the New Literacy which is being much discussed but is outside the scope of this article.

Try to gain access to the Internet, or preferably Mosaic, and see what's available. Internet offers potential for new creative and critical opportunities. We need to determine how such opportunities may be provided and how existing curricula needs to be changed or developed.

NEXT MONTH

What's coming in the next issue of *Acorn Computing*

- **Roll your own – we put Eidoscope and the Replay Starter Kit through their paces**
- **Entry-level DTP – what do you need in the way of equipment, software and knowledge?**
- **Is C++ the language of the future?**

Plus

- **A survival guide to playing adventure games**
- **How to create 3D vector graphics**
- **What makes your Acorn machine tick**

Regulars

In addition to the best informed views, comprehensive coverage of new education products and the latest in high quality software, next month's *Acorn Computing* includes:

- Problem Solved: Get those computer difficulties handled fast
- TechForum: The ins and outs and the whys and wherefores
- News: The latest and the greatest up to date and in print just for you

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Express yourself

Rob Miller looks at a way to improve Risc PC sound

WHEN details of the VIDC20 chip were released by ARM Ltd, it looked (or sounded) like Acorn's future machines were at last going to be capable of producing CD-quality, 16-bit sound. While the Risc PC had not yet been announced, it didn't take much guessing to realise that VIDC20 would become the successor to VIDC10 which had been used in virtually all other Acorn RISC computers.

The Risc PC, when it was launched, did contain the new VIDC20 but, thanks to Acorn's somewhat over zealous cost cutting, retained the same sound system as previous machines. Fortunately, Acorn did have the foresight to allow upgrades of the sound system by providing the necessary links on the Risc PC's circuit board for direct connection to VIDC20.

All you need to do to get 16-bit sound from the VIDC20 is to take the sound signal directly from the chip and then feed it through some new electronics and then back on to the main circuit board. Expressive Software Projects, who have already had a hand in developing the SuperSound system for the Archimedes, is the first company to produce such an upgrade board to provide 16-bit sound on the Risc PC.

The Minnie Audio Card upgrade consists of a small board that plugs directly on to the Risc PC's circuit board via a set of pin links. The signal is channelled back through the Risc PC's sound system via a short lead so that it can be played through the computer's speaker, or through the headphone socket (mono only) for better quality as well as stereo sound.

Software replaces the Risc PC's existing sound drivers to enable 16-bit sound to be played back.

Installing the software is easy and a special application copies the various modules and data tables from the disk to your hard drive so that it is loaded whenever you turn on or re-boot your machine.

Those familiar with Replay – Acorn's Full Motion Video system – may be aware that the specification includes support for 16-bit audio. The Minnie card now allows any suitably-recorded sound track to be played back in all its glory. The two sound-only Replay files included on Risc PCs give a good demonstration of *before and after*, especially when played through an amplifier.

A further application is included with the package that allows you to play back samples recorded in a variety of formats. At present, Player can cope with RIFF (Microsoft WAVE), WaveForm and Armadeus files but ESP promise the list to be extended to cover many others including sounds from professional samplers such as Akai and Roland.

Samples are dropped on to the player application whereby they are interrogated for their filetype. If known, a window displays information with regard to the sample i.e. sample type (Signed linear, Unsigned linear, Archimedes u-law or ADPCM), the number of bits used (4, 8 12 or 16), whether it is mono or stereo, and finally the sample rate used in hertz.

If a sample is loaded that Player does not recognise, it doesn't complain but instead tries to play it with the parameters from the previously loaded sample. If these are incorrect, you can change them simply via a further control window.

Sample type, number of bits and mono or stereo can all be selected with the click of a button and the sample rate can be entered directly or from a list of possibilities.

A set of cassette player-type icons give playback control over the sample and a slider allows you to vary the volume of the sample as it is played. A repeat icon allows samples to be looped continuously; ideal for playback of rhythm tracks and the like.

Summing up

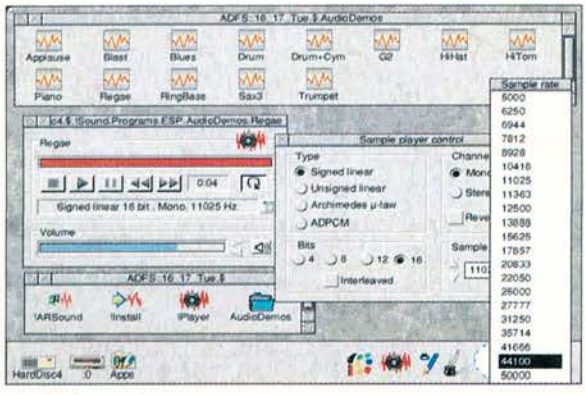
The sound quality is excellent, especially when you have the output coming through the headphone socket into an amplifier. 16-bit samples I'd previously grabbed using Computer Concepts' Lark card sounded exactly as if they were being played back directly off a compact disc. The lack of body associated with the old sound system was gone entirely.

£70 appears to be a lot of money to just improve the sound quality of your computer, but ESP intends it to be the starting point of a whole new 16-bit sound system for the Risc PC. In a couple of months, they hope to have software ready which will provide you with a complete implementation of a General Midi synthesiser, without the need for any additional hardware.

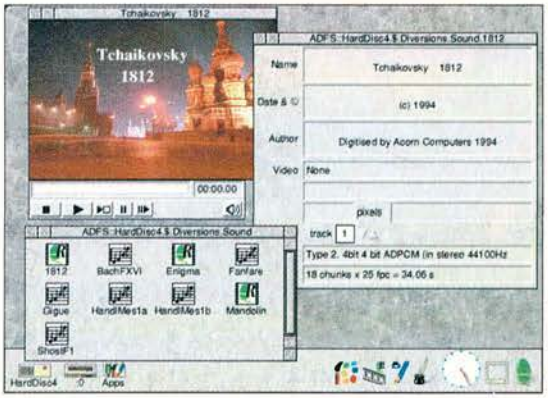
Having everything in software means that upgrading your system will be extremely easy and adding new features will be just a case of installing new software. The power of the Risc PC means that all the features of today's synthesisers – such as modulation and reverb control – should be possible. This could also mean that an Acorn computer is finally excepted as a legitimate machine in professional sound studios.

PRODUCT SPOTLIGHT

Product: 16-bit Minnie Audio Card
Price: £69.95
Supplier: Expressive Software Projects, Holly Tree Cottage, Main Street, Strelley Village, Nottingham NG8 6PD
Tel: 0602 295019
Requirements: Risc PC

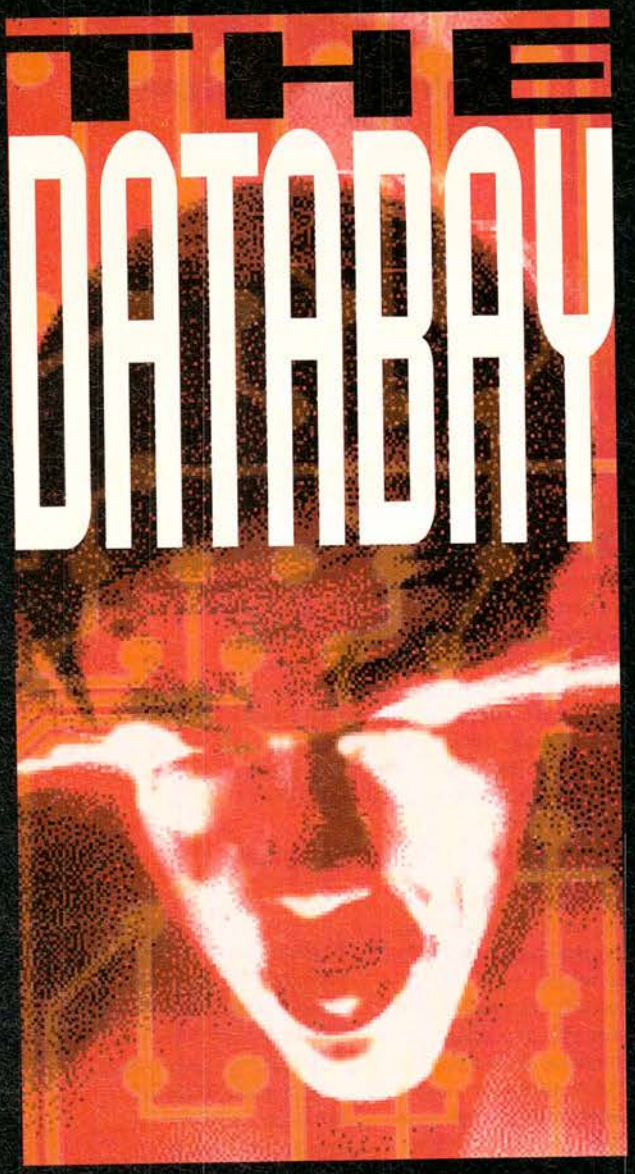


● *The Player application in full swing*



● *Replay now sounds even better*

THE DATABAY



Brace yourself for a raging torrent of new releases brought to you by Hal

IF you've ever despaired about the Acorn games scene, or been worried that the stream of new titles was drying up, then read on and relax – it looks as if we're in for a busy year. This month I thought I'd take a break from barefaced hacking and concentrate on the flood of new software heading in our direction.

Playing TAG with TBA

TBA, the people behind the innovative shoot-em-up Axis, makes a welcome return to our monitors with an unusual interpretation of the humble racing game. Formula Two Thousand spurns the terrestrial racing track and instead replaces it with a huge three dimensional loop in space.

What's special about this game is its engine – it's called *TBA Advanced Graphics* and it controls the management of the three dimensional environment. Its main advantage is that it makes the creation of 3D games much easier, which in turn means that a whole host more should be reaching your screens soon. The editor that makes this possible is named Holograph, and a commercial version may be produced some time in the future.

After doing a few laps on FTT, I took some time to speak to the people behind the team – Matt Dulson, Martin Piper and Alan Peters. Although they've been a bit quiet for the past few months, TBA is determined to take the games world by storm through some great titles and a couple of sensational technological breakthroughs.

At the Wembley exhibition, TBA was showing Formula Two Thousand and Cyber Ape to the masses, but this is only the beginning of a long stream of prospective titles. Due to arrive before Christmas are two more 3D games, Cobalt Seed and Acceptable Rate of Loss, both of which are shoot-em-ups. ARL is probably the larger product and takes the arcade classic Afterburner as its influence. Both promise to be filled with action, missiles and small bits of twisted metal.

Hopefully appearing for the Spring Show is a game called Warp Riders, prepared for TBA by Orbital Productions – namely Richard Hopkirk and Robert Archbold, with Ian Gibson responsible for the artwork. It's a hybrid between a racing game and a shoot-em-up, and has been designed with an arcade style firmly in mind.

Any keen programmers out there might be interested to hear that TBA is organising a group called *The Consortium* – a team of coders who receive full technical support and are given access to the Holograph design tool. If you'd like to get involved, write to the address below or send them a demonstration.

If you're looking for a joypad TBA produces a wide range, from a basic SNES-style pad to a fully micro-switched desktop console. It's looking to expand its range with a selection of popular *Asciiware* designs, and if they're not enough to satisfy your desires, then TBA will even perform a custom conversion on the joypad of your choice. So, you've got your joypad and you're playing your favourite game. What's next?

You may have heard of the multiprocessor board being released for the Risc PC. Although its main use will no doubt be in serious applications, TBA couldn't resist the lure of all that speed and is planning to check for its presence in future games. As an example, if you were playing ARL on a turbo-charged machine you could expect absolutely everything to be texture-mapped, vastly increasing the quality of the visuals and the realism of the game.

As if this wasn't enough, TBA has also drawn up plans for connecting up a virtual reality headset to the Acorn. It might not be possible to display stereographic images this way as it effectively doubles the processor time, but the wide field

● *Construction in progress...*

of vision would make games like Wolfenstein or Biohazard absolutely breathtaking. A prototype model should be at next year's Acorn World show, and I for one will be particularly interested to see it.

You can contact TBA Software at Mead Farm, North Road, Timsbury, Bath, Avon BA3 1JH or phone on 01761 470003.

Burning up

Last time, I mentioned an arcade racing game from Oregan called Burn'Out – at the time of writing it was due at the Wembley show, but since then the authors, David Flynn and Ian Jeffray, have decided to delay the release in order to add several enhancements and polish the gameplay. I asked them to chart the history of the game, and over the next couple of columns I will be presenting their story. Here's the first instalment.

Dave – 'Burn'Out was originally conceived back in June 1994. I was sitting in front of the computer at 2am in the morning after doing some mundane work, when it suddenly occurred to me – why don't I do something different? I decided to try my hand at creating some arcade-style graphics. Flicking though some old Sinclair magazines I had around, I discovered a rather old screenshot of a racing game. Instantly I was inspired, and by 6am that morning I had created a mockup screen of Burn'Out. The next day I sent the screen to Ian Jeffray, who agreed that it would be great to create an arcade racing game.'

Ian – 'I wrote lots of different track routines, all prototyped in trusty Basic. The road was to be effectively *texture mapped* which meant lots of bitmap scaling, so I knocked up some quick routines for Dave – these did, however, give a good impression of the game.'

Dave – 'The first demo was then assembled, containing the scrolling road and trackside objects, with the car superimposed on top. We then made the first breakthrough when we managed to get a 3D track set up. This first demo looked very much like what we wanted, except for the logs on the bridges which looked too flat. The first plans included a large introductory sequence, an attract mode and credits rather than passwords. It became clear to me that we wanted this game to have a strong arcade feel to it. Joe Nash, a musician friend of mine, was called to do the music.'

Ian – 'The tunes were to be played during the game, so we reserved one channel specifically for sound effects, and we could then break in to the music to play any extra sounds required. This meant that we had to design the tunes carefully, since they had to sound good with only two channels! At that point, I started work synchronizing the sound effects with the music and game actions.'

Joe – 'The main tune was inspired by some dance-house music and was created on my Yamaha SY99 Keyboard. I sampled all the sounds from the SY99 and built up the final music module using Protracker on the Amiga. All the tunes are fast paced, and have been designed to capture the atmosphere of a 1980's arcade machine.'

Dave – 'Now that the new graphics and music had been created, the game took another step forward. We then had a demo that played a series of tracks, and had music and sound effects playing simultaneously. At this stage, the development title of the game was RidgeRider. However, after some discussion I chose the name Burn'Out – simply because nobody could think of a better name!'

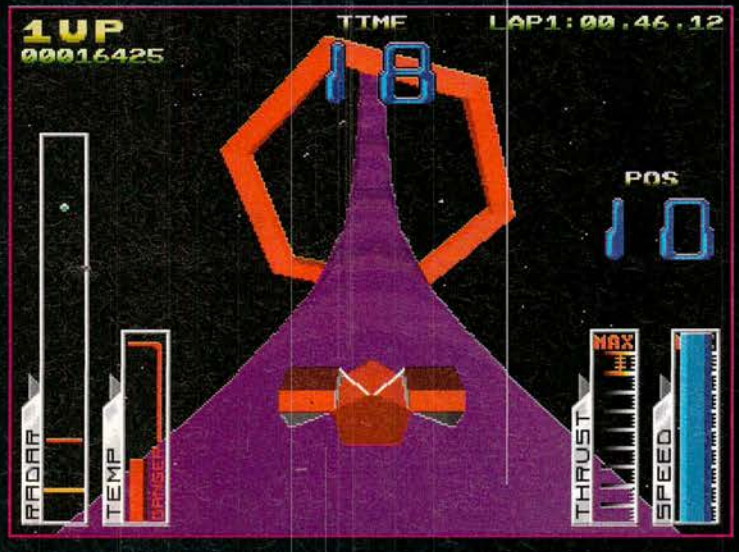
Link terminated

To round off this special column, I'll just mention a couple of rumours that have passed my way. Firstly, the idea that games conversion is a one-way process could well be challenged soon. Some recent releases have sparked interest elsewhere and if all goes well, a few of our favourite games might well be seen on platforms such as the PC and the 3DO. I'll say no more, but here's hoping!

Wolfenstein is proving to be very popular, and a lot of people are asking when Doom will be released. It's important to understand that Doom's licence costs an inordinate amount of money, but it's not impossible that it might be seen on an Acorn platform – possibly on one that has extensive networking capabilities.

Enjoy the deluge of new releases, and I'll see you next time with more hints, tips and plenty of games gossip.

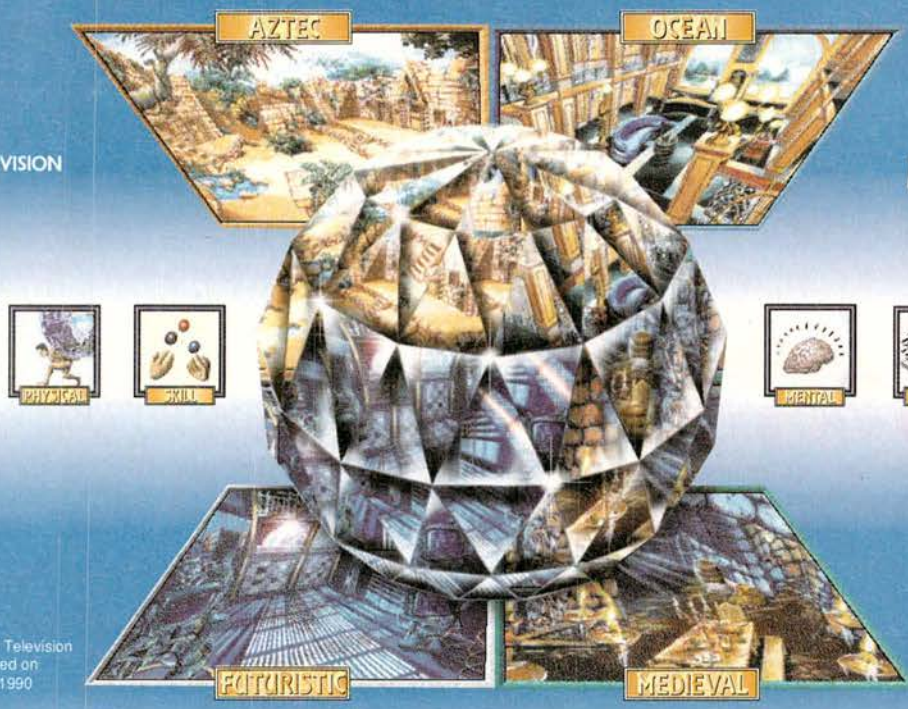
You can write to HAL at the following address:
The Databay, Acorn Computing, Media House, Adlington Park, Macclesfield SK10 4NP



● *FTT in action*

THE CRYSTAL MAZE

CHANNEL FOUR TELEVISION



Now you can play TV's No.1 Adventure Game

The Crystal Maze is a Chatsworth Television production for Channel 4 based on ideas by Jacques Antoine ©1990

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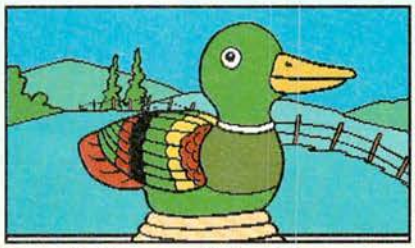
ROSIE AND JIM TALKING ACTIVITIES



Duck loses his Quack

Jim gets the Sneezes

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Rosie and Jim is a Ragdoll production for Central Television

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Formula Two Thousand

...burning rubber in the stars

Welcome, one and all

AFTER a lengthy absence, TBA is making a comeback with what may be the first in a long line of impressive three dimensional games. TBA's been hard at work on its in-house development system named Holograph, and hopes to use it to great effect – it's certainly turned a few heads on the release of Formula Two Thousand.

The game engine allows several copies of the same program to be run at once. Although this isn't really much use at the moment, once more TAG games have been released you should be able to load up several titles without stretching the computer's memory.

FTT is not your average racing game – imagine, if you will, an octagonal straw stretching through space. If you were to introduce several kinks and bends, thread a few tunnels, rotating rings and banners along its length and then glue some cars on to it, you might be able to picture the scene of the latest speed extravaganza since Stunt Racer 2000.

Normally you can rely on gravity to keep your car on the road, but in this game things are a little different. As the track twists and turns you must always keep on the inside of the curve, or you could end your days floating through the universe in the futuristic equivalent of a Nissan Micra.

The game starts with a golden logo spinning into view – you're watching *Ambassador 7*, a live sports channel covering the latest action in Formula racing. Your first task is to pick your team, and my advice is to check through those on offer carefully. Some are easier to control than others, and it's not entirely sensible starting your racing experiences in a car with less grip than a Teflon tyre.

After that's out of the way, you're introduced to Bob and Ted, two android presenters who show you round the track and give you the odd bit of useful information. Once you've memorised all the bends, it's time to climb into your sled and qualify.

The first tracks are adequately signposted, and using the controls you rotate your car round the pipe to achieve the optimum position for each of the corners. It's all done against the clock and there are several large checkpoints stationed around the course – pass through one of these and you gain a few more valuable seconds. If you don't make it in time, it's Game Over.

There is a *boost* key which allows you to increase your speed dramatically, but this can have its drawbacks. If you use it at the wrong time, you're liable to fly off into the depths of space. If you use it too often, your sled overheats and you're left with an unpleasant repair bill.

Once you've qualified, it's time for the main race – now there are other cars trying to ram you off the road and you have to be sharp to stay in the lead. Get through that and you've got nine more tracks to master.

FTT is certainly a high quality game with good looks, even more so if you've got a fast computer, but it is a little limited in terms of gameplay – you won't see any new tracks until you complete the first. That aside, it shows off the raw power of the Acorn machines to good effect and it's certainly challenging to play. If you've always wanted to dart through space on the back of a giant straw, look no further.

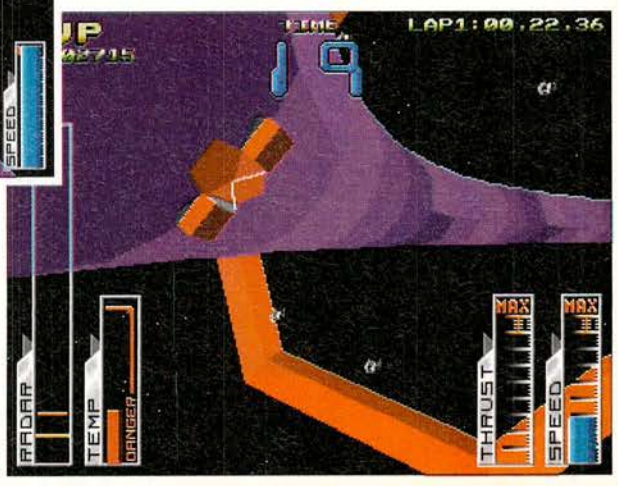
Steve Mumford

PRODUCT SPOTLIGHT

Price: £24.99
Supplier: TBA Software, Mead Farm, North Road, Timsbury, Bath, Avon BA3 1JH.
Tel: 01761 470003

No turning back

The choice is yours



More speed, more thrust

Arcturus

...gyroscopic fun on a grand scale

THE first time I saw Arcturus, I was under the impression that it was going to involve a jeep driving over a Zarch-style landscape. Well, the jeep's gone but the scenery has remained, and Oregan has released a game that owes a great deal of its heritage to the Marble Madness genre.

To summarise the plot, you must control a gyroscope over an undulating terrain in order to collect diamonds. Of course, life is never that easy and Arcturus has plenty of hazards, from rippling lava pits to objects which resemble vacuum cleaners – stay too close to one and the ground is sucked away from under your feet.

Armaxess is the programming team behind this title, and the earlier work on demo creation shines through in some graphically spectacular effects. The high score table shatters into fragments which spin away into the distance, and the landscape of each level is smoothly shaded, as opposed to the chequerboard pattern of Zarch. The music is particularly good, and although it's only played on the title screen, it's worth spending some time to take a listen.

There are several new features to contend with in this latest gyroscopic incarnation, including teleport squares and oscillating hills – you have to time some jumps carefully in order to reach new parts of the terrain. The aliens which populate the surface of many of the landscapes have their own quirky behaviour, and it's important to understand how they respond in order to complete some of your tasks.

The levels are nicely varied, and there's a good learning curve with the first few landscapes showing you the different features of the game in turn. Each playing area can be practically any size, ranging from the early single-screen variations to large fractal-based fields with high mountain ranges stretching across the map.

Before you start a level, you're shown a small version of the area with all the diamonds and aliens shown. It's useful to make a study of this, as on several there are extra lives and bonus gems to be picked up. Some of the puzzles are particularly fiendish – one level can't be completed until a path has been opened by the land-destroying aliens, and in another you've got mere seconds in which to capture a gem whisked past you on a conveyor belt.

Surreal adventure

The aliens are triggered when you pass nearby, and most of them will then change direction to chase you. If you can weave your way round a pit and lure one to its destruction, you score some well-earned points – however, if you lose control, it's all too easy to plummet to an untimely death yourself.

Passcodes are given out every four levels, and instead of being an actual word, they represent your score and number of lives when the code was revealed to you – meaning that you can continue with a new set of levels with precisely the same statistics as before.

Arcturus is a good implementation of a popular game, and the graphics and animation are impressive – if you've got a fast computer, you'll enjoy the increased smoothness and speed. Although it's not quite as action-packed as some of the other titles around at the moment, the real enjoyment lies in the puzzle-solving aspects. If you're looking for a gentler game with a bit of intellectual bite, go for a spin in Arcturus.

Steve Mumford

PRODUCT SPOTLIGHT

Price: £24.95
Supplier: Oregan, 36 Grosvenor Avenue, Streetly, Sutton Coldfield B74 3PE.
Tel: 0121 3536044

There are many ways of getting uphill

Use the map to plan your strategy

Wavelength

...what's the frequency, Tom?

GAMESWARE'S latest title springs from the keyboard of the prolific Tom Cooper, author of that particularly individual game, Hamsters. A departure from his usual cartoon styling, Wavelength is a shoot-'em-up which aims to provide the maximum number of blasts per gallon while avoiding complex controls.

As with most games of this type, the plot isn't incredibly important – what matters are the weapons, the explosions, and most of all, the points. The game is structured into mission-like levels – at the start of each you're given a task to perform, which usually involves blasting an enemy installation to bits.

Once you've obliterated a set number of targets, your ship is recalled and you're whisked off to the next level. The controls are simple, and Wavelength plays like a blend of Spheres of Chaos and Axis – if you can imagine such a concoction.

You start off with a lowly beam cannon, but you can upgrade weapons if you manage to collect a coloured token from the debris left after an enemy is despatched. However, if you want to make any progress, you must collect tokens of the same colour – otherwise, the armaments are swapped without any improvements.

As well as the standard beam guns and bolters, there's an impressive laser to be picked up, and you may be lucky enough to find the Helix weapon – a twisting streak of energy that makes short work of anything foolish enough to step into its path. Drones are also up for grabs, and you can go for an extra gun pod or a missile launcher. Both hover by your craft and add that little bit of extra firepower just where you need it.

Fire and mayhem

Wnat next, Helix or drone?

With each weapon upgrade your firepower becomes more intense, and if you're skilled enough to reach maximum offensive strength, you may well begin to find arcs of electricity streaming away from your ship towards the enemy – most effective, and certainly very stylish.

A smart bomb is also available, and this is perfect for causing large-scale destruction. Once activated, a cluster of warheads scour the land in front of your vessel, leaving you to flit round madly and avoid the shrapnel. If you do happen to die, you'll be glad to know that a few tokens are left behind and if you're quick you can use them to upgrade your new ship.

The graphics are perfect for the styling of the game, with a mixture of simple wall textures and some beautifully raytraced emplacements. Animation is impressive, and there's a strong feeling of power watching something wither under a stream of laser fire.

The game is responsive, and the player gets that all-important sensation of control. Although the sound during the game is a little predictable – after all, how many noises can you ascribe to a large explosion – the music during the option screens is catchy and professional.

Wavelength isn't particularly easy to get into, but it's well worth the effort. The skill level is set at the right grade to allow some progress while keeping that *one more go* appeal. I've rarely seen such an impressive range of weaponry – if you're in need of a little stress relief, then steering massive bolts of energy towards helpless targets takes some beating. Tom Cooper has created a fast, slick game with lasting appeal, and I'm both pleased and relieved that he's been able to shake the compulsion to maim small, furry animals.

HAL

Stylish shooting

PRODUCT SPOTLIGHT

Price: £19.95
Supplier: Gamesware, Worthy House, High Street, Hamble, Hants SO31 4HA.
Tel: 01703 456523

Robocatch

...budget shoot out

IN simple terms this is space invaders. Okay, you can spice this up a bit. After all, you are not any old machine but the first man-made machine to try to become the Ace of Aces. This is done by completing nine zones. To do this you must avoid bombs being dropped on you and shoot the differently shaded and patterned orbs above you.

Go right...

...fire

PRODUCT SPOTLIGHT

Price: £7.99
Supplier: Generation Design, 2 Whitecliff Gardens, Blandford Forum, Dorset DT11 7BU.
Tel: 0258 452507

These orbs then become *power-ups* of various sorts. Hit the aliens and claim their cargo and at the end of each level is a nasty which must be hit three times. This is not a difficult game to assimilate or master and all you have to worry about is completing the levels with the best score.

The music and sound effects are good and optional and this is a nice game to while away a lunchtime with. It will not break the bank, nor will it keep you up to all hours playing it. However, it is an excellent game for young children as it is easy to learn and play.

Jo Giles

Floopy

...pick it up as you go along

ANOTHER classic arcade game with this budget offering. With 40 screens to negotiate you must traverse these collecting ice creams, helmets and apples. The collecting of such treasures is Floopy, a strange grey character with a disconcerting habit of rolling into a ball and disappearing off the screen.

Actually this is a very useful trick. By exiting stage left, he immediately reappears stage right, thus avoiding the nasty who thought he had him trapped. Don't get too carried away though as the game's designer has popped in a few traps for you when you use this technique.

Also in attendance are blocks of ice, some of which can be moved. Push a block against something and it melts. As you progress you'll discover apple cores and bricks which can be similarly moved and will be binned or crumbled respectively.

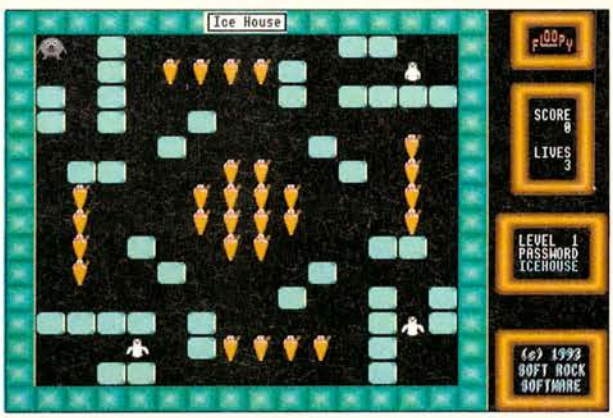
On each screen you'll be accompanied by three nasties – penguins, bees or hammers. Touch means instant death. These are also arrows and if you move over one you'll be forced in that direction. Oh by the way, the Xs kill. When there is nothing more to collect, off you go to the next screen. You can skip levels via the passwords which is handy.

The music is okay but I preferred the silence, especially as the music speeds up when keys are pressed on my machine. Also, you'll need to disable the RISC OS 3 screensaver too, but Floopy is not alone in this requirement. Risc PC owners can't play yet but Soft Rock is working on an enhanced version for release next year for £7.99. Cute and quite addictive and, for the money, not bad at all.

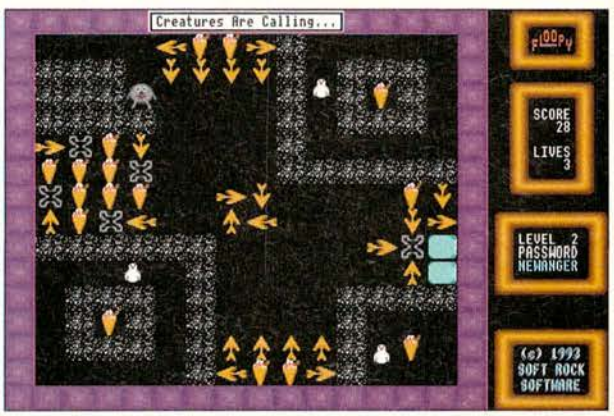
Teri Paul

PRODUCT SPOTLIGHT

Price: £3.49
Supplier: Soft Rock Software, FREEPOST (BS 7978), Westbury-on-Trym, Bristol BS10 7BR.
Tel: 0117 9491634



Ice cream looks good



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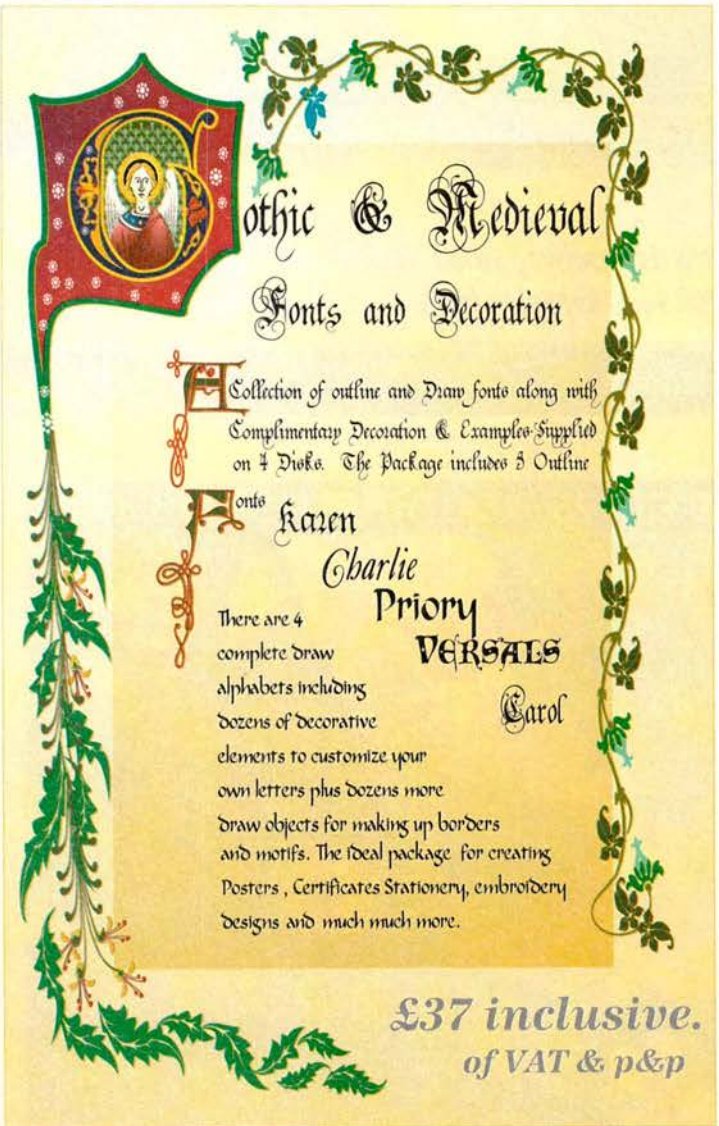
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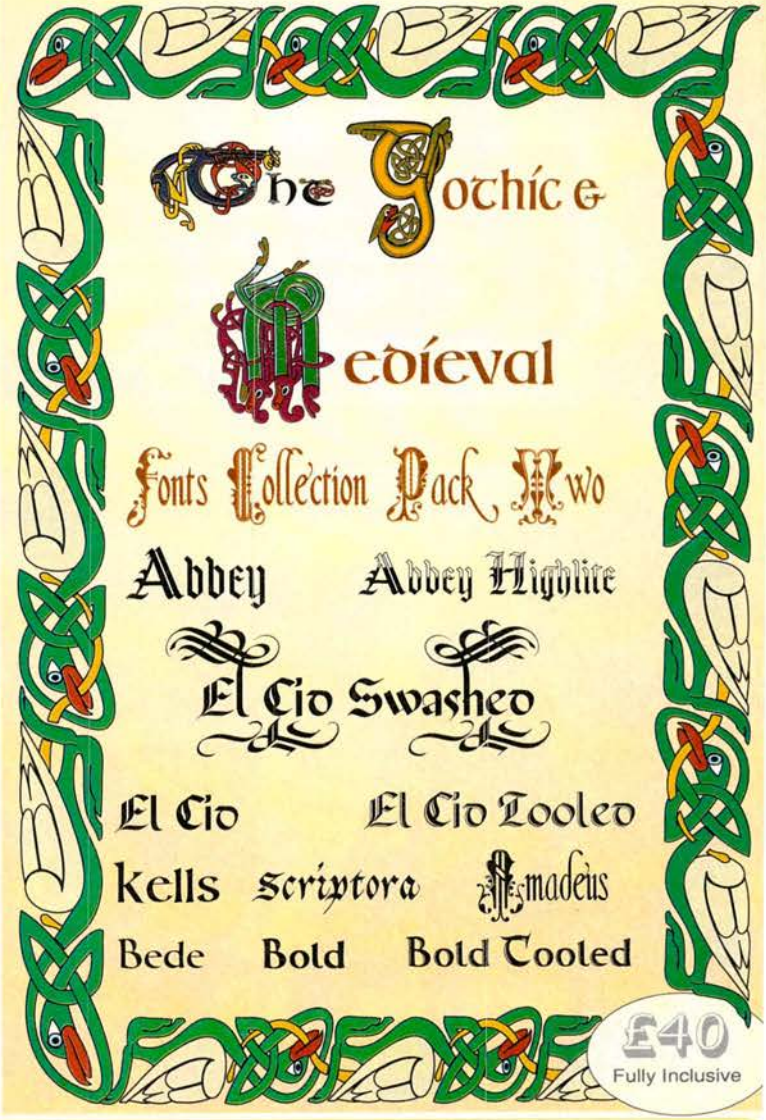

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Sue & Dave wish you all a prosperous New Year

Making the most of long winter nights

Teri Paul examines the useful and diffident in the wonderfully wide world of share, free and PD-ware

THE message for the New Year is that you should be on-line. Acorn wants its enthusiasts accessing info online and it seems that everyone is trying to get out versions of World Wide Web browsers and Mosaic clones. Okay, so many of us have been but the Acorn machines are not blessed with superb browsers and message handlers. This is a shame as there are a lot of programs out there as well as resources and data.

A lot of PD libraries get their contributions via the bulletin boards and *ftp* (*F*ile *T*ransfer *P*rotocol) sites. You can either make use of their expertise as a filter or go for a dip yourself.

As easy as FTP

Finding what you want is a major problem and you can clock up a lot of phone and online charges without finding anything. Internet provides the *address* command – unfortunately *address acorn*, *address archimedes* and *address riscos* don't return anything.

However, you may stumble across the *archie* command which searches filenames for a target string – search for *acorn* was successful but *riscos* wasn't. Watch out for duplicates held at different places and that the file really is what you want – the path name should give you a clue.

Follow these steps to success:

- login
- go internet
- Type *ftp <site_name>* at the *ip>* prompt
- change directory using *cd <subdir name>*
- list the contents of the directory with *dir* or *ls*.
- download file to your *ip>* directory using *get*.
- log out of ftp using *quit* or *close*
- files may need to be SetTyped – usually of text or archive format: Archives can be read using Spark and SparkFS.

Offline downloading

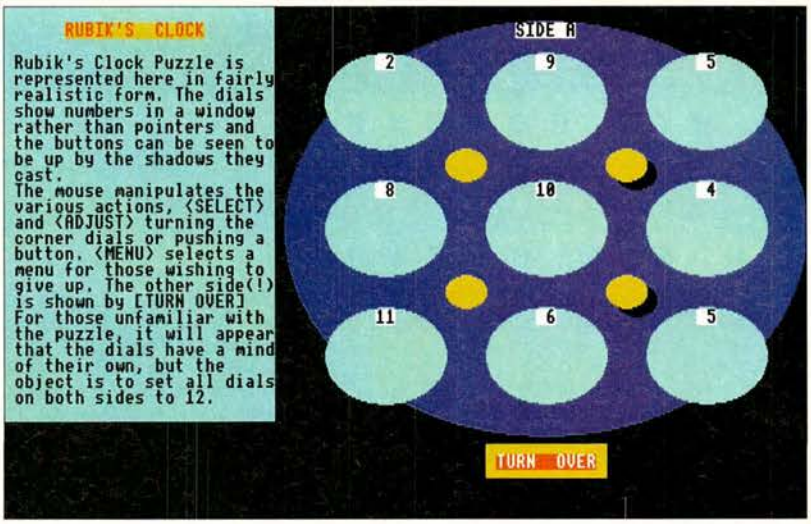
The problem with downloading information using *ftp* is you must remain online waiting for it to finish. This increases your online costs and can prove quite expensive with large files.

If you are registered on CIX – as *Acorn Computing* is – or some other commercial organisation that provides a similar facility, you have access to a cheaper alternative, offline downloading. This allows you to specify which path or file you wish to download and does this while you are either on-line using other services or off-line.

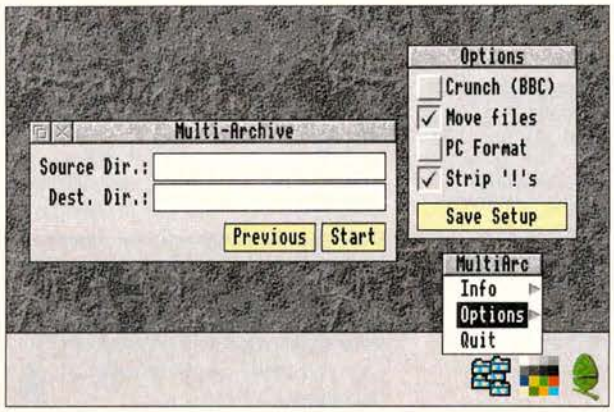
In the case of CIX you get to the internet as usual then, in place of *ftp*, you can use the *batchftp* command:

- *batchftp <ftp_site> <path/filename>* places a request for the given file to be downloaded from the specified ftp site to your *ip* directory.
- *batchftp list* returns a list of your current batchftp requests.
- *batchftp status* tells you how many requests it is currently handling, and how many of those are yours.
- *batchftp kill <batchftp_id>* cancels the given batchftp request – the id number is gained using *batchftp list*.

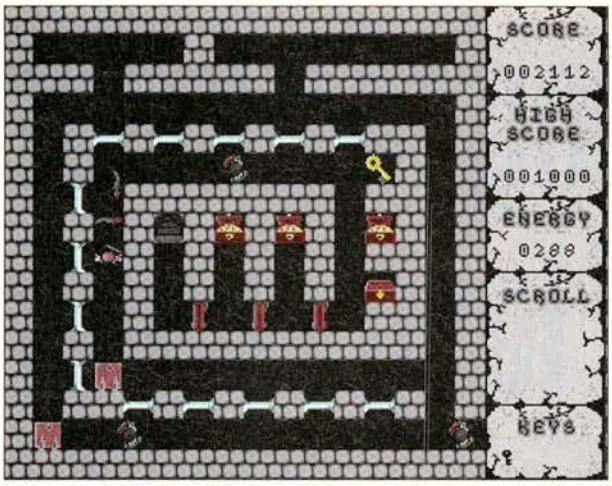
Offline-downloads are performed by the system three times an hour so your data should not take too long to ➤


RUBIK'S CLOCK
Rubik's Clock Puzzle is represented here in fairly realistic form. The dials show numbers in a window rather than pointers and the buttons can be seen to be up by the shadows they cast.
The mouse manipulates the various actions, <SELECT> and <ADJUST> turning the corner dials or pushing a button. <MENU> selects a menu for those wishing to give up. The other side(!) is shown by [TURN OVER]
For those unfamiliar with the puzzle, it will appear that the dials have a mind of their own, but the object is to set all dials on both sides to 12.
SIDE A
2
9
5
8
10
4
11
6
5
TURN OVER

● *Time is the thing – or is it just a clock*



● *Multi-archiving lets you automatically archive entire directories*



● *Can you get the key to Castle Blackheart?*

➤

arrive. When you log back in, the selected files should be available for downloading to your machine.

Sources of Acorn PD

The *Higher Education National Software Archive* (HENSA), based at Lancaster University, contains a wealth of software for the full range of popular micros. This includes both 8-bit and 32-bit Acorn platforms, with over 600 applications available for the latter.

Site name: *micros.hensa.ac.uk*
Path: *micros/bbc* or *micros/arch/riscos*

The first thing I suggest you do is access the index – good hunting.

Nicks and niches

I've said it before and I'll say it again – there is nothing like the PD for finding those solutions to one of your problems. An amendment to Murphy's Law insists that you find this solution once you've solved the problem or thrown the offending item through the window, but here are a few which might make life a little easier or at least make it seem so:

Joris Röling's **ClipBoard** is a small module allowing you to copy the textual contents of writable icons into the modules own buffer and vice versa by a few control keys. These follow the usual format Ctrl+C to copy, Ctrl+X to move, Ctrl+V to insert and Z to replace the textual contents of an icon by the buffered text.

To copy, move, paste or replace, the caret must be in a writable icon. ClipBoard is a module task with a buffer only as long as needed – it starts with having none at all.

Library comes from A.R.J. Brion and lets you access the programs, utilities, modules and so on placed in a directory called !Library.Library. It's an alternative way of filing which is simple and may fit your way of working better than more complicated and sophisticated programs such as Menon.

As limits on what information can be down or uploaded are disappearing fast, archiving becomes a must to save both line time and hard disk space. S. D. Vincent's **MultiArc** lets you automatically archive entire directories of files or applications with a separate archive created for each file or application.

All you have to do is drag the two directories on to the white icons on the main window and click start.You can set the compression you want from the iconbar, choosing between Acorn and PC formats.You can also choose between crunch and squash compression.

If the *strip* option is selected when MultiArc comes across any applications, the ! will be automatically removed from the archive name. When both SparkFS and Spark are loaded, MultiArc will use Spark to do all the archiving. The program can run into problems if the destination disk is full as no error messages are displayed – this can be put down to Spark's idiosyncrasies though.

PhotoCopy is an advanced disk sector copier from Al Knight. This multi-tasking sector copier for the Archimedes allows you to copy between drives and stores data in one continuous buffer, so you can take multiple copies from one source.

Classic games corner

It always amazes me that certain games never seem to die and these are usually the incredibly simple ones. I wonder just how many versions of snakes – one line trying not to cross itself – there are in the world. The same can be said of other classics. For instance, if there is anyone out there who has not heard of or played Colossal Adventure let me tell you this is the father of fathers when it comes to text adventure games and can be found on every machine in the computer world.

Ray Loades-Bannon converted this to the Archimedes in 1989 and renamed it **Adventure.** If you haven't managed to complete it make this a New Year resolution not to be broken this year. The puzzles are logical but tricky and remember the golden rule – *make a map*.

The next blast from the past must be Prof Rubik who intrigued nations in the 1980s with his cubes, pyramids and conundrums. The Clock was supposed to be the hardest of all but wasn't. We even printed a computer solution in the November 1988 issue of *The Micro User*. Well, it's time to delve about in the cellar or attic and find your **Rubik Clock** and see how the computer version compares. This version by Geoff Gibson was inspired by that issue of *The Micro User* and also heralds from 1989.

A single-tasking program, it is a Rubik puzzle, which may fascinate you or leave you totally cold. It all depends on your love for puzzles of this nature.

If the frustration of fighting a parser or failing a puzzle solvable by a two-year old – but few people over that age – has angered you, take a look at **Castle Blackheart**, an arcade game in the classic-style. You know the thing – collect the treasure, kill your opponents and pick up keys to give you more places to roam or treasure to collect.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 17 Lambert Park Road, Hedon, Hull, East Yorkshire HU12 8HF.
BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Masterdisc, 2 Seaview, Hoylake L47 2DD.

32-BIT HOUSES

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Alpine PD, PO Box 25, Portadown, Craigavon BT63 5UT.
APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN.
Arcaynia, PO Box 1927, Sutton Coldfield B74 3QZ.
ArchAngel PD, PO Box 41, Exeter, Devon EX4 3EN.
Archimedes Fractal Group (AFG), 30 Bowen Drive, West Dulwich, London SE21 8PN.
ARMistic PDSL, 136 Wellesley Road, Ilford, Essex IG1 4LJ.
Australian RISC, 241 Hawkesbury Road, Winmalee NSW 2777 Australia.
Cheap PD, Greenways, Grubwood Lane, Cookham Dean, Maidenhead, Berkshire SL6 9UB.
Craig Beech PD, 30 The Deerings, Harpenden, Herts AL5 2PE.
Datafile, 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Datastream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Different Ideas, Eyton House, Eyton, Leominster, Herefordshire HR6 0AG.
Digital Phenomena, 104 Manners Road, Southsea, Portsmouth, Hampshire PO4 0BG.
DigiTech, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
Eureka PD, 78 Rawlinson Road, Southport, Merseyside PR9 9NE.
Five Star Marketing, 4 Shepherds Walk, Bushley, Herts WD2 1LZ.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
LowCost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Lunchtime Disk Magazine, 203 London Road, Chesterton, Newcastle, Staffs ST5 7HF.
Moonlight Graphics, PO Box 3569, Cape Town 8000, South Africa.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Planet PD, 37 Manor Drive, Berrylands, Surbiton, Surrey KT5 8NF.
Skyfall, PO Box 2220, Birmingham B43 5RZ.
The ARM Club PD Library, 19 Woodberry Way, London N12 0HE
Westbourne Services, 34 Bradley Street, Wooton-under-Edge, Gloucester GL12 7AR.
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Back in time

Frank Jukes turns the spotlight on a CD-Rom view of history

THE recent and very welcome NCET initiative has managed to introduce a few more schools to the excitement of CD-Rom and has provided further encouragement to publishers to provide materials suitable for the medium.

Among these materials is Journeys into History, a multimedia resource package from the Durham Microtechnology Centre and Durham Record Office designed to allow pupils in Key Stages 2 and 3 to explore aspects of history linked with the North-East in a number of simulated journeys. Four major journeys are provided to cover in turn: Early Christianity, Life in Roman Times, Architecture and Social Conditions since 1066 and The Development of Railways.

The first of these journeys is centred on Lindisfarne and shows how Christianity has been influenced and has developed throughout the years since the Romans arrived on our shores. In common with the rest of the package, two versions of the text are offered – one easy and one hard. Unfortunately, the easier version is rather terse with short sentences which, despite their brevity, still remain a little complex.

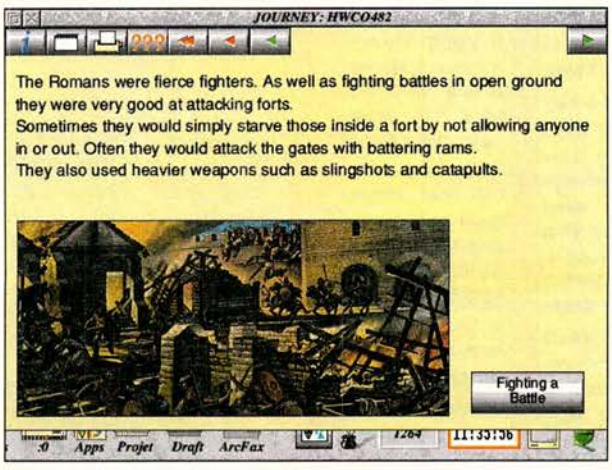
PRODUCT SPOTLIGHT

Product: Journeys into History
Price: £100
Supplier: Nelson Multimedia, Mayfield Road, Walton on Thames, Surrey KT12 5PL.
Tel: 01932 252497
Requirements: 4Mb memory and CD-Rom

The full version of the text is much more readable but, by its nature, may exclude some pupils unless help is at hand. As a gesture towards this, a glossary is provided and words which may cause difficulty are highlighted in the text in red. Clicking on these elicits a brief definition of the word.

On my Risc PC, however, the highlights consistently appear in 16 colour modes only, where the colours within images are rendered incorrectly. In a 256 colour mode they often remain the same colour as the rest of the text.

● *The interface is easy to follow*


JOURNEY: HWC0482
The Romans were fierce fighters. As well as fighting battles in open ground they were very good at attacking forts.
Sometimes they would simply starve those inside a fort by not allowing anyone in or out. Often they would attack the gates with battering rams.
They also used heavier weapons such as slingshots and catapults.
Fighting a Battle
Apps
Projet
Draft
ArcFax

Lindisfarne contains a wealth of photographs, line drawings and pictures which illustrate the various points being made very well. The contributions of people such as Bede and St Cuthbert are covered and some of Bede's writings about Cuthbert are provided as samples to be listened to.

Hadrian's Wall provides an opportunity to explore the reasons why the Romans built walls and the way in which they constructed them. Films, photographs, paintings and text are all used together to support a thorough and informative account. Other aspects of Roman life are also covered and there are some excellent pages on civilian life, with references to Roman towns and religion as well as pages on military life and the weapons and equipment the soldiers used.

In fact this section is fascinating, with a wealth of information carefully chosen to provide an insight into what it must have been like to have been alive in those times. One particularly good feature is the way in which care has been taken to provide links to other aspects of the package. It is, for example, possible to arrive at the same page about Paternoster from both the Lindisfarne and Hadrian's Wall sections.

The section on Darlington is centred, naturally enough, on the introduction of the world's first passenger railway and the work of people like Timothy Hackworth, Richard Trevithick and George Stephenson. The pages are, once again, very carefully constructed to give a comprehensive overview of an important part of our history. The insight they provide gives a good idea of the contributions made by the various characters and how their work was interrelated.

The excitement of the period is apparent and there are opportunities to share in it. For example, there is a copy of the announcement of the opening of the Stockton and Darlington Railway on the 19 September 1825 available to be read on screen – once the nineteenth century English has been decoded.

Durham – the fourth of the major sections – provides a lot of information on the city and its history. Included in this are sections on the foundation of the city, its architecture and the ways of life of its inhabitants. Saddler Street and the Macknight family are chosen to illustrate how people used to live and how changes have occurred over time. The poor environmental conditions are stressed and it is clear that the average life span of 30 years for its inhabitants was a direct consequence of those conditions.

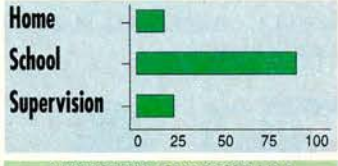
Summing up

Journeys into History provides a wealth of images, text, and sounds to create a very comprehensive resource for anyone with an interest in its chosen topics and their influence on our history.

The main themes are well balanced and are complemented by suggestions on how local investigations may be undertaken. As a starting point for work in this area, or simply as an additional resource, it is well worth consideration.

SUITABILITY

JOURNEYS INTO HISTORY



NATIONAL CURRICULUM

History ATs 1-3, Technology AT 5

Ages KS 2-4

Maths according to the Greeks

Geoff Love sets off on a Maths Odyssey

THOSE Ancient Greeks were a bunch of clever old geezers, weren't they? It seems they did most of the leg work behind the GCSE Maths course before we had even written the syllabus. So why not let them teach it?

Or so goes the philosophy behind Maths Odyssey. It aims to take many of the elements of the GCSE Maths course and presents them as they may first have been discovered – within the context of an adventure through Ancient Greece. However, for the purists among you it is pointed out that some more general mathematical problems are also included to broaden the content of the adventure – these are not Greek in origin.

Maths Odyssey is supplied on one or two disks, depending on whether you have access to a high density drive. You can choose one of two eras and are asked for your name, which then becomes a filename under which your position can be saved and returned to at any point in the game.

Some pleasant graphics introduce you to the different problems you meet along the way, although the use of system font throughout the package, while very readable, is beginning to look a little dated.

In all there are over 20 problems to negotiate, covering such delights as Pythagoras' theorem, square and triangular numbers, pentagram geometry and musical ratios. These mainly span the Maths National Curriculum from Level 5 to 8. A difficulty level of easy, medium or hard can also be set at the outset of the adventure. The corresponding effect on each problem varies but is described fully in the very informative manual.

The problems themselves are graphic and are controlled mainly by mouse, but some entries are required from the keyboard.

It is refreshing to see maths, which is usually taught in a theoretical fashion, put in a *real* context. I saw poles stuck in the sand on the beach by Thales displaying his similar triangles; I played musical pipes with Pythagoras; I also weighed grain in the market place.

The problems are of varying quality. Some are quite succint and I completed them feeling I had learnt, consolidated or achieved something; others tended to ramble on somewhat and I felt a frustration to complete the task in order to progress to the next section rather than to actually learn anything from the current problem.

This was particularly true of the Socrates task concerning the area of squares. This involved a large amount of reading and much answering of yes or no. At the end, Socrates proclaimed he had just proved there was no such thing as teaching since I had completed the task by just agreeing or disagreeing with him. Since by now I had absolutely no understanding of what I had just done, I was inclined to agree with him once more.

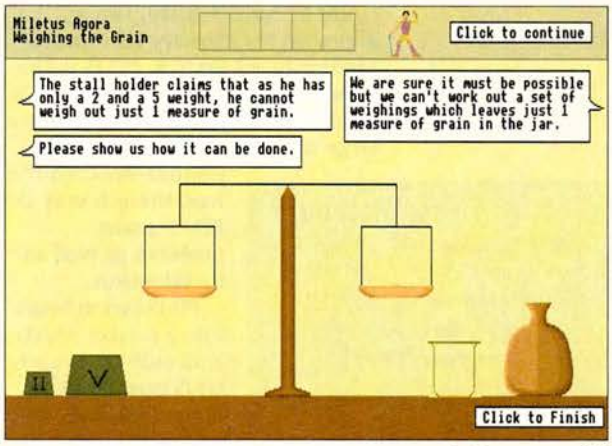
Available before most problems are a series of help pages. These are textbook-style draw files explaining the theories being used. They are quite useful for refreshing your memory of certain facts prior to attempting a problem. As draw files they can be printed out for reference to when you are away from the computer. It would have been nice though if they had been supplied printed with the manual.

PRODUCT SPOTLIGHT

Product: Maths Odyssey
Price: £42 (site licence £85)
Supplier: Computer Tutorial Services, 4 Mill Hill Road, Cowes, Isle of Wight PO31 7EA.
Tel: 01983 294333
Requirements: RISC OS 3 and 2Mb ram

At the Agora in Miletus
Click to continue
So you want to know where you can find Thales ? You'll never find him on your own.
But if you help us solve our problem we'll tell you the way. The trouble is ...
We only have enough money for 1 measure of grain and must buy some to make the master's meal tonight.

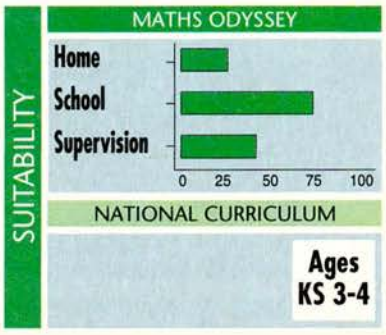
● *Maths Odyssey contains some attractive graphics*


Miletus Agora
Weighing the Grain
Click to continue
The stall holder claims that as he has only a 2 and a 5 weight, he cannot weigh out just 1 measure of grain.
We are sure it must be possible but we can't work out a set of weighings which leaves just 1 measure of grain in the jar.
Please show us how it can be done.
II
V
Click to Finish

● *Can you weigh the grain?*

Summing up

I found the software quite interesting. It has a large content and would certainly provide much material for classroom use. Some of the problem solving activities would also be suitable for pre-GCSE pupils. The puzzles contained have their highs and lows but if you can live with this then Maths Odyssey is worth investigating.



Primary

Will Longman's new package put more Acorns into the school office? Frank Jukes investigates

UNTIL now I've always associated PIMMS with the advertiser's image of sunny summer afternoons and sliced fruit! Well, PIMS from Longman Logotron certainly delivers more than a little sunshine and using it could be quite fruitful (sorry). An acronym for Primary Information Management System, PIMS is the Acorn equivalent to the now well-established SIMS that's found on a large number of PCs in schools around the country. And therein may lie PIMS' main problem as well as its salvation.

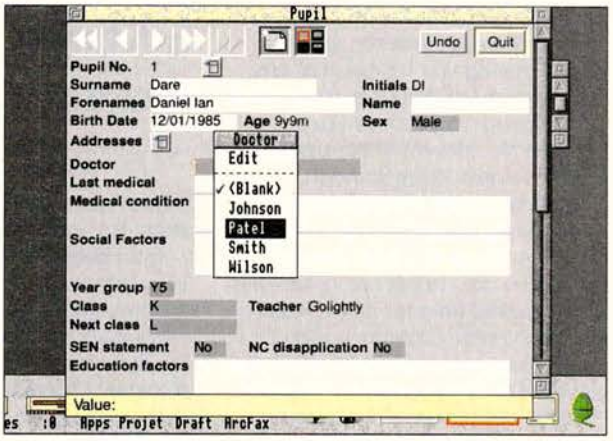
PRODUCT SPOTLIGHT

Product: PIMS
Price: £399
Supplier: Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 01223 425558

PIMS has to break into a market which is already very much SIMS orientated. Many LEAs have put much time, effort and money into setting up departments to support the use of SIMS, yet the system is not universally liked by its users in schools, especially those with experience of the kind of environment offered by the Acorn platforms present in most classrooms in the country.

When evaluating new software, first impressions as well as past experience count for a great deal, and it is here that PIMS scores immediately. Most teachers with responsibility for a school's management information system will have experience of Acorn software and will be familiar with the way in which most of that software works. Selecting from textual menus by pressing a key is not part of their normal computing world and it isn't the most productive way to make choices. It is the way, however, that SIMS works and the menus are not very friendly either.

● *Pupil data is clearly set out*



PIMS, though, is friendly and straight away it strikes the user as a cheerful package. It is also colourful and encouraging – just what a lot of us need when trying to track down where that last 35p in Capitation is hidden. The layout has clarity, the system works quickly and, above all, what is on screen makes sense to those without the benefit of an office or accounting background.

The package is built around six basic modules: Accounts, Budgeting, Staff, Pupils, Property and Reporting, which may be used singly or in combination and which may interact with each other as the opportunity or need arises. For the majority of schools at the present time, the two most important modules are likely to be those concerned with pupil records and accounting.

The pupil records area builds a comprehensive bank of information about the children in the school which can be used to create lists, search for pupils on a number of criteria and sort them in a variety of ways, as well as an admissions and leaver's register. Details are entered through a standard data entry card which is comprehensive and offers short cuts whenever possible.

For example, with entries such as the child's GP, a menu will offer choices based on names of doctors already entered for other children. Clicking on one of them will enter it for that particular child and save much typing.

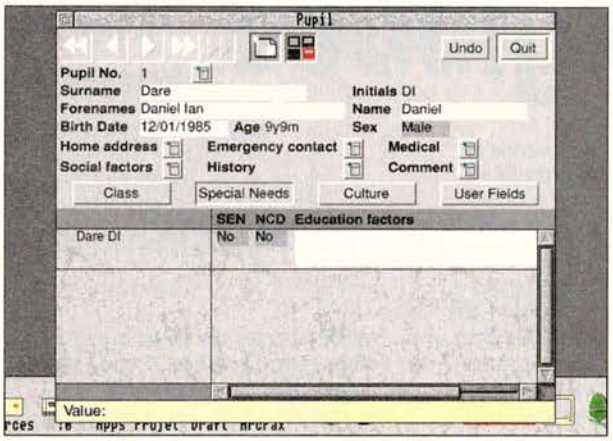
As well as offering short cuts, the package also offers easy extensions to the standard. Most schools will want details of who to contact in case of an emergency but details of just two adults is often quite insufficient. At my own school we have four as standard and sometimes need more. To record this number of contacts on PIMS is simple. Click Menu over an existing contact's address card and ask to add another one. On other systems, completely new fields have to be created, something which can be quite daunting.

Once information has been entered, viewing it can be achieved through a choice of four different formats which vary in the amount and type of detail available on the screen at any one time. One of the ones I found most useful was the *Part table* layout in which most of the information is hidden and only available via pop-up menus – something which can be very important in a busy office where sensitive information may be on view to anyone with sight of the screen.

The need for such security is obvious and Longman Logotron has

● *Instant access to budgets*

management



● *With additional information only a click away*

gone to a lot of trouble to ensure that data on PIMS is as secure as it reasonably can be. Individuals can only gain access to the package via their own personal password and data written to disk is encrypted.

Since the advent of LMS, schools have become much more accountable for the ways in which they spend money allocated to them and for recording how it is spent. The accounts section of PIMS is designed to make the planning of that expenditure, as well as its recording, less painful than it could be.

Budgets can be created and tested and statements can be produced at any time of the year to check that things are working out. Reports on individual areas may, for example, be created to monitor the effectiveness of measures taken to reduce costs while more generalised overviews for audiences such as the Governing Body can inform on more general trends.

Setting up the accounting section for the first time is not a very easy task but the manual provided with PIMS is excellent. Not only does it explain what needs to be done in clear language and small steps, but it explains *why* it has to be done. This makes all the difference when it comes to using the system in an intelligent and confident way.

My only disappointment is that there isn't a dummy set of data available. I would very much like to have seen an imaginary school set up on a resources disk and then have been able to play around with the data to try things out before using the system for real.

Once accounts have been set up and the system is running, it can be all too easy to become lost in a sea of figures when trying to track down individual payments or to work out just how much of the money in an account has been committed. With the options built into PIMS, a whole variety of reports can be printed to show how things stand. The Detailed Budget Head Report, for example, gives a complete breakdown for each of the budget areas and shows how money has been spent during the year.

On a day-to-day basis, PIMS handles all of the usual functions to do with raising orders, recording deliveries and invoices and then authorising payments. Details of suppliers are automatically added to the relevant list and the difficulties of split or part deliveries are easily coped with. In fact, most eventualities appear to have been foreseen.

The Staff section of PIMS seems to have had less development time spent on it than the Pupil and Accounting sections. It is, in fact, a little disappointing. Whereas items purchased through the Accounting section may be automatically entered into the Inventory section, not all of the information contained within the Staff area is available for use elsewhere. Information on salaries, which has to be entered manually and not from a look-up table, is not, for example, transferred to the Salaries section to commit teachers' salaries.

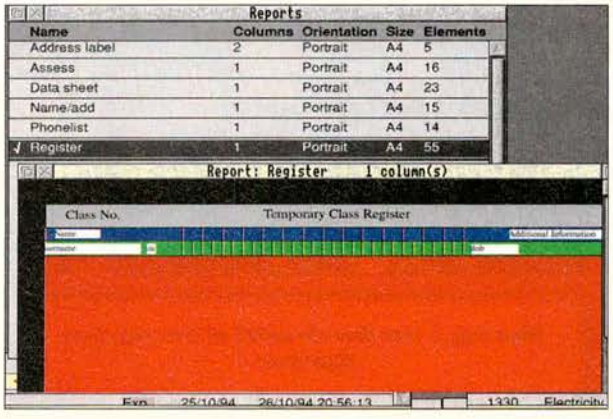
Reporting, on the other hand, is one of the strengths of PIMS. With the number of standard reports available from the various sections, and a selection of extra ones available from the Reports section, there is little excuse for anyone being left in the dark about any aspect of a school's administration which is handled by PIMS. Also a strength of the package is the quality of those reports, not only in terms of accuracy and completeness but also in terms of appearance. The printed material emanating from a school says much about standards and attitudes and PIMS helps to create and maintain high standards.

Summing up

I really can't remember when I've been so impressed with a new piece of software, both at first sight and after a longer, more careful look. PIMS is a delight to use and undertakes most of the administrative tasks a primary school would want to computerise in a very professional way. It is obvious that Longman Logotron has taken advice from primary school staff and then heeded that advice.

I can, however, only regret that PIMS wasn't available three or four years ago when schools and LEAs were making decisions that may now be very difficult to unravel. PIMS deserves a wide audience.

● *The reporting is first rate*


Reports
Name Columns Orientation Size Elements
Address label 2 Portrait A4 5
Assess 1 Portrait A4 16
Data sheet 1 Portrait A4 23
Name/add 1 Portrait A4 15
Phonelist 1 Portrait A4 14
Register 1 Portrait A4 55
Report: Register 1 column(s)
Class No.
Temporary Class Register

Ruffs, bacon and globes

Marshal Anderson examines the latest edition to the 4Mation range

MIKE Matson has quite an impressive body of work behind him. From the original Granny's Garden a decade ago, Mike and 4Mation have built a reputation for producing software that is first and foremost educationally sound. This has meant taking commercial risks and some of the most innovative software, World Without Words for instance, has not always been a hit with mainstream education – I don't think there will be any such problems with this latest release.

Betsi is a fully animated adventure set within a late Tudor environment. This period is a fairly obvious choice as it links directly to the National Curriculum Key Stage Two history guidelines. The package, running best in Mode 28, presents a large picture with text beneath. The elements in the picture can be clicked on with the mouse and they react in some way, or information is given about them.

PRODUCT SPOTLIGHT

Program: Betsi
Price: £34.50
Supplier: 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353
Requirements: 2Mb ram

Betsi is a *Big Dog* of mixed parentage who we meet outside the palace. Click on the guard to get things going as he throws a stone at Betsi – she is too soft to be part of the royal hunt and our task is to find her a new home.

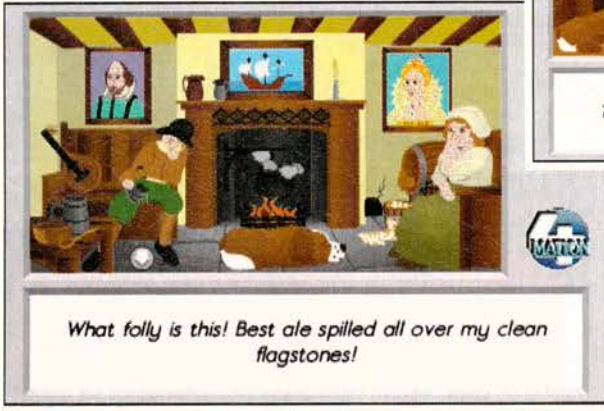
We move through the various locations by clicking on arrows – the left arrow from the palace takes us into what is intended to be Tudor London. Once here we can explore freely, clicking around any of the 30 or so scenes presented. The artwork by Sue Edwards is clear and attractive and draws us into the story. We can wander the streets for a bit, visit the church, wharf, theatre and inn, enter several of the houses, shops and workshops or strike out into the countryside beyond the town.

Most of the scenes are chock full of bits and pieces to click on and find out about, but we are not limited to inanimate objects – the program is populated with a host of characters. Some of these ignore Betsi but we can listen to their conversations and pick up plenty about the times from them. Others can help Betsi find her new home.

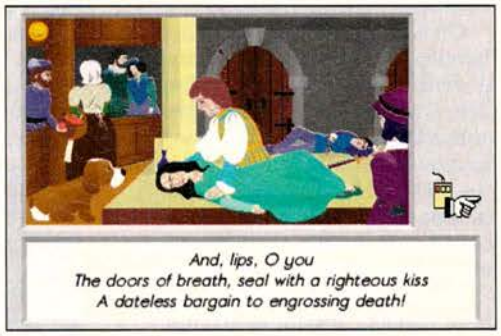
Exploration is not only a pleasure, it's vital to completing the game. The actual adventure element is a fairly straightforward set of links that must be discovered, and are planned so as to take us through most of the available scenes. The task really isn't the point of the exercise but it gives the children some focus and direction and encourages them to read the text carefully to guide Betsi to her new home.

The use of adventures in the classroom is still a matter of taste, and careful organization is vital but the results can be impressive. Some of the links in the game are quite obscure and teachers may want to use the the Adult's Route Guide provided to help a class on its way.

The worksheets provided contain about 200 questions to be answered – I would have liked to have seen these provided as a text file so that I could edit them down to something more manageable, but this is a small point.



● *Enjoy the graphics and the language*

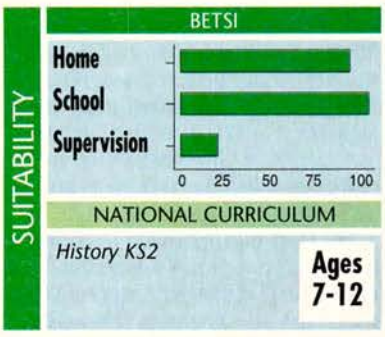


● *See the bard and his players in the flesh*

Summing up

Betsi is not a program designed to teach, it is an activity in which children learn by exploration and discovery. From this point of view it is a breath of fresh air in a market that is tending towards the learn this bit before you move on approach. It also makes it an ideal package for home use and children will spend many hours exploring before they have seen it all. Whether used in class or at home, Betsi will provide a valuable learning resource for upper-junior-aged children.

If you want a preview you can see the package at The Shakespeare Show – How To Be Bottom – at The Barbican Centre in London until mid-January, and at various venues around the country after that.



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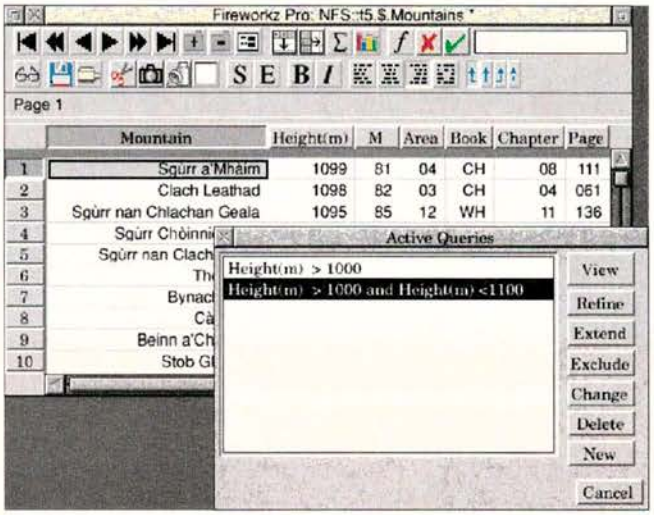
Recordz is the new fully featured database from Colton software. Flexible options include card index or spreadsheet layout, refinable search queries, easy label printing and mail merging. The only limit to the size of your database is your available disc space. The search language is very simple, with choices such as 'contains' or 'does not contain' - there are no complex commands to remember.

wordz recordz resultz



Recordz shares the excellent Z family user interface, making it one of the friendliest databases ever created. The status line helps you with choices and the emphasis is on ease of use throughout the program. Combined with Wordz (word processor) and Resultz (spreadsheet) Recordz forms Fireworkz Pro. Buy Recordz on its own for just £99 or as part of Fireworkz Pro for £149. Recordz site licences start at £198 (10 user), Fireworkz Pro site licences start at £298 (10 user).

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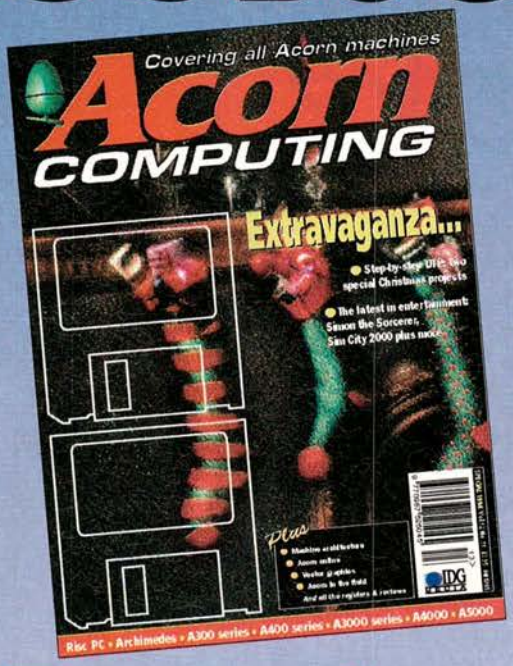
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Musical interludes

James Coates samples and constructs with a new Midi package

USUALLY, I won't sing something's praises within the first sentence, but it has to be said that Vertical Twist really has excelled itself this time. Gone are the days of sampler cards that required an industrial winch during installation. VTi presents a sampler and Midi interface the size of a credit card which runs in any Archimedes series machine – except the A3010 and A4 – and represents excellent value for money.

Midi Sampler fits into the socket inside your machine reserved for network interfaces. For your money, you get lots of manuals, installation instruction, a lead which connects to the Econet socket providing Midi in and out, and a headphone-style jack for plugging into a sampling source such as a Walkman. My only minor gripe was the installation instructions as they could have been clearer. I knew what I was trying to achieve but for someone new to adding cards of this type, a few illustrations would instill confidence.

The software supplied with the board is uninspiring as Echo+ fell over as soon as I loaded it. This is not really a problem because if you are serious about sampling you would choose Rhapsody 3 or Serenade. But Echo+ is the weakest link in this particular package. My only minor niggle with the hardware was that the cable to the sampler could have had better shielding, as I did experience some electrical interference.

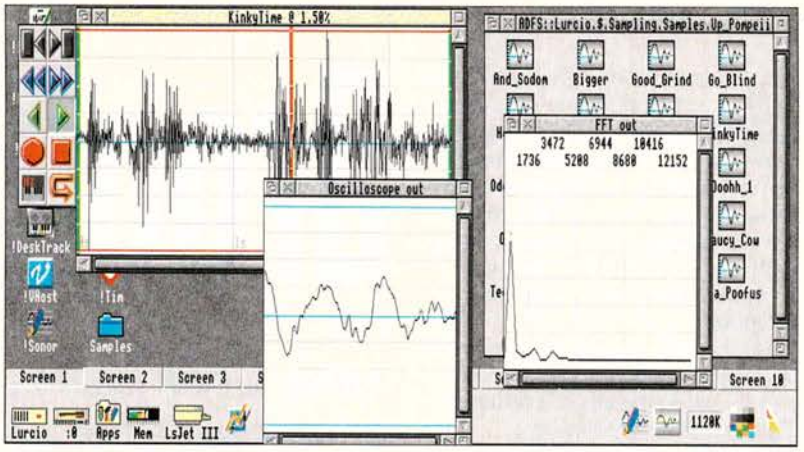
The real jewel in the crown is Sonor – a replacement for the tediously painful Pulse software, originally supplied with Midi Sampler. Sonor is another 7th ARM Systems product for VTi, as is Desktop Tracker, and what those boys don't know about the Arc's sound system isn't worth knowing.

Sonar messaging

Clicking on the iconbar opens an AudioWorks-esque menu which allows you to choose the length, sampling rate and source of your sample. The Midi sample function deserves a special mention as it allows you to sample from any Midi instrument, without having to touch it. Simply choose the sound you require and Sonor will sample it automatically.

Once you have captured or loaded your sample, you are presented with a window containing a visual representation of your sound, and some rather cute chunky tape recorder-style icons which control virtually everything.

Samples can be played in either direction at two speeds, providing a search facility akin to that found on a video, so allowing you to shuttle to the correct part of the sample. You can then select an area to work on by dragging the mouse. You can also work on different parts of the same sample in different views. Another nice facility is the ability to alter the frequency without needing to twiddle with numbers – a two octave piano-style keyboard is provided.



● *Real-time waveform and FTT display at a remarkable rate*

Sonor can apply a number of effects to your sound, such as reverse, echo, and fade – much faster than AudioWorks. In addition, Sonor has the ability to silence part of a sample and there is also a very useful *add frequency* option. This allows you to add a sine wave to any part of a sample at any frequency and amplitude.

You can apply filters to your sound, which allow you to remove certain frequencies, and most programs have simple high and low pass filters. Sonor has a variety of filter options which use complex algorithms to achieve their effects. If you want to know how, the algorithms are at the back of the manual.

The standard oscilloscope and fast fourier transform windows allow you to see your sound and the update of these windows is performed at a remarkable pace. These windows are useful for checking levels – useful when you are trying to get the volume right. An undo option is also provided.

Samples, once taken – or loaded from disk – can be merged, added, inserted, or averaged. Basically, everything you could ever wish to do to a sound can be done, apart from pitch shifting and direct-to-disk recording – although these are due in a later version. A monitor facility is also being considered.

If you have been sampling using other software, Sonor allows you to load from a multitude of sources in a variety of formats, and can also strip samples from various Tracker modules. Samples can also be saved into another application's native format. An option to compress samples on saving would have been nice for those samples you'd like to store, although numerous PD utilities would be happy to oblige.

Summing up

I swear I don't have shares in Vertical Twist, but I have to say that this is the best thing since sliced yoghurt! Pulse users can finally escape Jurassic Park for the paltry sum of £14.95 because Sonor represents superb value for money, and will also work with samplers from other companies.

Sonor has quite rightly whipped the laurels from AudioWorks and sets a new standard for creators of this type of software to aim for. For those of you who cannot spare a network interface, a printer port sampler is also available, although this lacks a Midi interface.

Should you buy it? I would say a resounding yes.

PRODUCT SPOTLIGHT

Product: Midi Sampler
Price: £93.99 (inc)
Supplier: VTi, Unit 1, Shopwhyke Centre, Chichester, West Sussex PO20 6GD
Tel: 01243 531194

AGENDA

- Competing with CB radio
- Noisy A3010 transformer
- Internal corrosion
- Serial port unplugged
- Memory freeze
- Net access

Brooking no

Mike Cook delves into his mail to answer your questions on hardware and software dilemmas

Q I HAVE an eight month old A5000 (25MHz) with 4Mb ram and two hard drives from Conner. The computer works perfectly and I have no complaints about it at all. The trouble is that my son-in-law – who shares a house with me – is a CB addict and my computer plays havoc with his reception.

He says that his is picking up a lot of noise and it sounds just the same as a TV when the aerial is removed. This seems to vary slightly according to what tasks I have running. To overcome this he has to turn his squelch control way up which means that he cannot make contact with the weaker stations.

The computer is on the same floor as the CB with the screen of the monitor facing towards it. There is a brick wall between them. The CB aerial is an 18-22ft Whip type mounted on the chimney. It is all competently installed with an SWR meter being used and so on.

Can you offer any ideas? I am a TV technician by trade but this is out of my realm. I did try putting a few turns of the CB coax around a ferrite rod as I had seen the BBC technicians from our local radio station do to cure radio signals breaking through and causing patterning, but to no effect.

Richard Whincup, Hereford

A *All computers and monitors generate electromagnetic interference and unfortunately a brick wall is not much of a barrier. The problem here is that the two units are in such close proximity – moving them apart by even a few feet can dramatically improve the situation.*

First of all you need to decide what route the interference uses to get into the CB set. Remove the aerial and turn the squelch up. If that shows bad interference it is entering the set by direct radiation and you should consider shielding the equipment with an earthed panel of aluminium between them. It could be that the interference is entering through the mains, so try operating the CB on batteries to see if that is the case.

Finally, and most likely, the interference is being picked up on the aerial down lead. Make sure this is routed as far away as possible from your computer and that the CB system is ***really*** *earthed. The best way of doing this is to run a thick wire down to the garden and attach it to a metre-long copper rod driven into the ground, An alternative could be a metal biscuit tin filled with coke – the coal derivative not the soft drink – buried in the ground and well watered in.*

Wrapping the coax around a ferrite rod will work in some cases but a much better solution is to use a few turns around a ferrite ring.

You could also try a braid breaker. This effectively replaces the continuous connection of the coax screen with a capacitive coupling. You can make one with a piece of double-sided printed circuit material about 4in square. On one side put a horizontal saw cut so the copper is broken and on the other side a vertical cut. Then connect one face to the transmitter and the other to the aerial. This may have to be removed on transmit if it affects your SWR too much.

If this does not work the only solution would be to use a cavity band pass filter. Construction is a bit more tricky and I suggest you contact your local amateur radio group for this. You can also get general help from the Radio Regulations division of the Home Office. Contact your Citizens Advice Bureau for the local office.

Information superhighway

Q AFTER reading the article about communications in the October issue, I became interested in the subject and dug up some old magazines and read that Acorn computers – I have an A440/1 with RISC OS 3 and ARM3 – use a different modem cable from IBM compatibles.

It would be very difficult for me to get an Acorn-specific cable where I am, let alone software, so I am going to use an IBM comms software over the Emulator. Will I still need to use an Acorn cable or will the IBM software be compatible with an IBM cable?

Matthew Bentham, Bangkok, Thailand

A *No, you will find that running the PC emulator does not change the socket on the back of the machine – it's not that good an emulator. What you need to do is to make up a cable from the 9-pin D-type socket on your machine to the 25-way D-type plug that is on your modem.*

While making up serial leads can be a bit hit and miss as far as the signals go, the following setup works for me:

25-way plugs link pins, 8-7-4 and pins 20-5
9-way plug link 1-4-9-8

Then link between the plugs

9-pin	25-pin
5	7
3	2
2	3

You should be able to get the plugs and sockets from any general purpose electronic supplier.

Transformation

Q IN March 1994 I bought an A3010 with 2Mb ram. This is connected to a Philips stereo colour monitor and has two joysticks and a mouse. During the last few weeks I've noticed an increase in noise from the transformer. Previously it had been a low background noise – similar to the A3000 which I had before. Now it is quite noticeable and has started vibrating the casing.

The on-site repair service engineer told me that they had had similar problems with other A3010s and although there wasn't anything wrong he replaced the board including the transformer, but it wasn't any better.

I have tried placing the computer on a different table and on the carpet to see if this would have any effect. The vibration and buzzing remain.

Can you offer any advice? If the problems I have pose no hazard and are unavoidable I'll be happy – it's just that I'm wondering if they are

interference

symptoms of something more serious and my warranty expires in March.

Steven Palmer, Stoke on Trent

A *When a transformer works it generates an alternating magnetic field. This flows through the core which is composed of laminated layers of iron. They need to be laminated and insulated from each other to minimise eddy current heating of the core. What happens, if this core is not tightly pressed together and bonded with resin, is that the lamination starts to vibrate with the field causing the hum.*

It sounds like there has been a batch of transformers that are not so impregnated with resin and therefore are vibrating.

There is no real problem here apart from the noise; it does not signal that the transformer is about to fail. However, if the noise is a real problem get the repair man back to sort it out.

Hard errors

Q WITH reference to your letter in October from F. W Startin, I've also had problems with the A3000 RISC OS 3.1 roms causing some rather unpleasant hardware errors when the Desktop would not run – blue/red colour sequence then a blank screen.

I stripped the machine of all the peripherals before deciding that the problem was caused by a bad socket occupied by rom 1. Some of the pins were corroded. By carefully using a thin modelling knife between the affected pins I was able to scrape away the corrosion and solve the problem.

During an inspection of the board I also discovered corrosion around the rechargeable battery that supplies backup power to the clock/calendar/cmos ram chip. Although the output voltage was correct at 1.4V, I replaced it rather than allow further corrosion to damage other components. It may be prudent to inspect machines of a similar vintage.

Remember battery replacement will lose the configuration. Carefully carry out the procedure headed Summary on page 213 in the RISC OS 3 User Guide. Provided that the battery is replaced by a competent engineer, the procedure should be quite easy.

R. Ashbery, Shelton Lock, Derby

A *It sounds to me like you caught this in time, but I am not sure if the corrosion came from a leaky battery or some other cause. It is always prudent to change your battery every two years to prevent it.*

Incompatibility

Q I OWN an A3000 computer with 4Mb memory, Aleph One 486 podule, IDE podule with 120Mb hard disk and RISC OS 3.1. I also use Beebug's floppy disk buffer with two 3.5in 800k and one 5.25in disk drives in a system housing.

Reading Geoff Gallacher's article in the November 1993 issue of *Acorn Computing* concerning the A3000 Multi I/O Expansion Card, this consisted of three stages: A high density floppy, an 85Mb hard drive and a secondary board with a second serial port.

I didn't need the second serial port or hard disk so I bought the primary Multi I/O Expansion card with a 1.6Mb drive. Everything worked fine until I tried to access a bulletin board. The serial port would not respond – I use an Amstrad SM2400 modem with Hearsay.

The problem only occurs when the I/O board is plugged in as the serial port works okay without any internal expansion or with the Beebug disk buffer attached.

I returned the card and the replacement had the same effect. Is it possible that the card is not compatible with the A3000 unless all the hardware is fitted, or is it something to do with my configuration. I like having a 1.6Mb disk drive but not at the expense of my serial port.

Jack Marshall, Walkley, Sheffield

A *It sounds like the software to drive the extra serial port is stored on the main board and is replacing the normal serial drivers. The problem will not go away by changing the board, which is something the distributors may not know. Basically, it is the manufacturer's fault and you could bring this to their attention.*

*Failing that, what you need to do is to look at the extra modules the board puts into your system and try to disable the serial port with an RMKill. Alternatively, when you want to use the serial port for your modem disable the whole board with a *unplug podule and a restart – it's quicker than removing it.*

Memory ain't what it used to be

Q MY A420/1 has been upgraded to RISC OS 3.11 and the standard Acorn ST506 hard disk controller replaced with an Armstrong Walker IDEFS. The hard disk has also been upgraded from 20 to 124Mb and the memory from 2 to 4Mb. All the upgrades were performed by an authorised Acorn dealer.

However, the machine *freezes* when certain applications are run, leaving the pointer stuck. The machine can be restarted only using a reset button. Impression Publishers, Eureka, Ports and WordWorks all run perfectly when copied to RAMFS and run from there, but freeze when run from the hard disk. Older versions of the programs such as Impression 2.14 do work from the hard disk.

I have copied new versions of the Fonts, System and Scrap folders from a colleague's machine but the problem still occurs when launching applications from the hard disk.

Mel Smith, Sandbach, Cheshire

A *My initial thought is that you have a memory fault somewhere in the computer. This is only showing itself when an application runs in the place where the fault is. Changing to the ram disk moves the memory allocation about and hence you don't see the problem.*

Try allocating the same amount of ram disk memory and run it from the hard disk anyway. If this still freezes then it sounds like the fault could be in the file system module. Try killing, performing an RM tidy and re-initialising it. In that way you could change the memory area it is using. The long-term solution is to go back to your dealer that fitted the memory upgrade and get him to perform a memory diagnostic test on the ram.

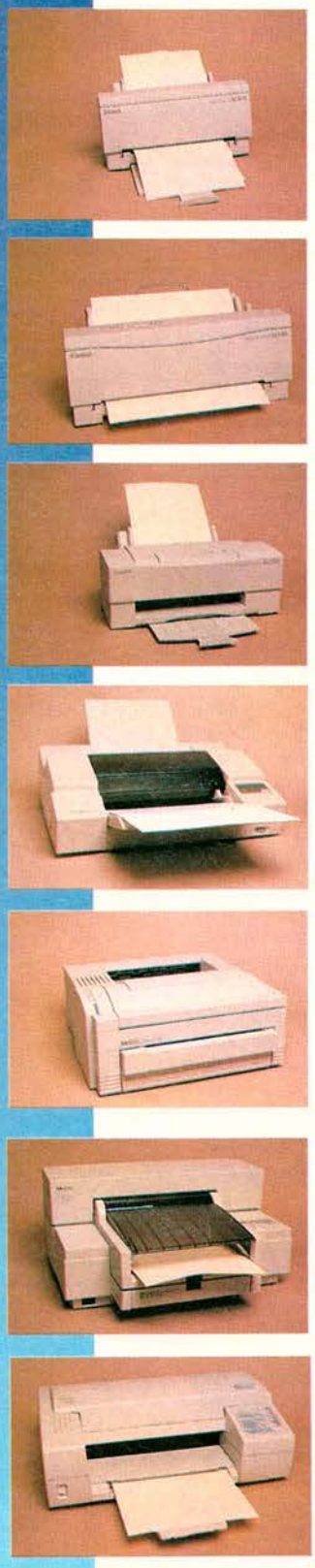
You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP, or e-mail to acorncomputing@cix.compulink.co.uk

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

RISC OS 3

Turbo DRIVERS

VERSION 4



Just a few of the printers supported by TurboDrivers...

...more drivers

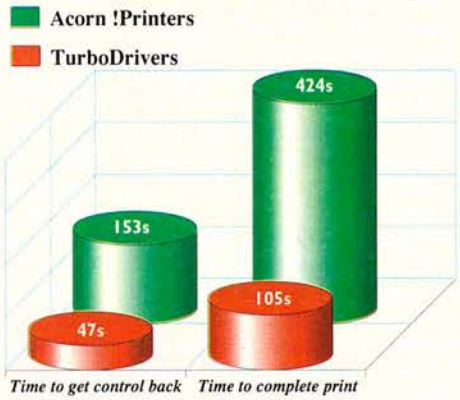
The TurboDrivers have been extended to support new printers, including the Epson Stylus Colour and to be compatible with the latest versions of Acorn !Printers and the RiscPC.

With the availability of new reasonable cost colour inkjet printers, and the increasing use of colour in printed documents, there is now even more reason to use TurboDrivers than ever before.

...more Turbo!

In the simplest cases, printing single copies of black and white documents, with little or no graphics, the TurboDrivers give performance gains of twice or more. However, for more complex documents, or multiple copies, or for colour documents the gains can be even more spectacular.

Risc PC TurboDriver timings



The graph shows the spectacular performance gains that are possible using TurboDrivers. These comparisons are made using the latest versions of !Printers, with a fairly complex single page DTP document (!MicroScope) on a colour inkjet and show that even on a Risc PC, the TurboDrivers can dramatically improve your printing performance.

Our tests show that when printing two copies of a typical 3 page document, containing a good mix of font styles, Draw and Sprite graphics, TurboDrivers can give control back up to 10 times sooner than the Acorn drivers.

These test are done with the Acorn drivers in 'background' mode (the new 'faster' way to get control back). When using the Acorn drivers in 'normal' mode the differences are even greater. The speed gains apply both to the older Acorn range and the Risc PC computers.

Version 4 drivers require Risc OS 3.1 or later. 2Mbyte RAM and hard disc recommended. Please state printer type when ordering.

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A cerebral tug of war

Mike Cook proves that brain is mightier than brawn

WELL, I thought I would start the New Year with a game, but, being a Body Build article it is rather a different sort of game – tug of war. Now, this is not your ordinary 10 sweaty men on the end of a rope sort of tug of war but more an intellectual/ physiological/ESP sort of tug of war.

The basic idea is quite simple but you will see how quickly it can become quite complex. I am sure you've all played the scissors/paper /stone game, you and your opponent choose one of these and there is an equal split of probabilities of a win loose or draw. In fact that is just about all there is to the game if it were not for the human element, what you try to do is to psyche out your opponent and second guess them. You use that, coupled with a knowledge of what they have chosen before to try to give you the edge.

In this game you have not three but four choices and a rather unusual way of making them. Each player has, in their fists, a mercury switch – this can be tilted up or down. Therefore the number of combinations one player can have is four, so taking into account both players there are 16 different ways the mercury switches can be held.

The idea is that, depending upon what combination is being produced at a certain instant, determines who wins that small tug. One player has to win eight tugs more than their opponent in order to win the game. For this to be fair, given any player's combination, the other player must have combinations available that win, lose and draw. This can be expressed in a logical fashion by using a karnot map. This is shown in Figure I. You will see that for each combination that player 1 has available, shown in the columns, player 2 has a chance of a win, loss or draw.

A game of life

However, fair as this is, you must remember that war is life and life isn't fair. In a tug of war the player who has just won a tug has the initiative, so it's a little easier for him to win the next tug. That's why you often see tug of war teams suddenly collapse, especially near the end. In our game this effect is simulated by a simple rule, in the event of a draw on a tug the player who last won gets the points. Therefore, the draw entries in Figure I turn into wins for a successful player leaving his opponent only one combination to reverse the tide. However, once it is reversed the boot is on the other foot and he has the advantage. Therefore, what the players have to work out is what are the winning combinations for each one of their opponents moves.

Just to stop players getting too good, what constitutes winning and loosing combinations are changed for each game so the game develops into one of quick learning coupled with sly looks at your opponents hand position to try and guess what combination they will come up with next. Of course it also helps to know exactly what is going on.

The electronics of this project are quite simple, all we need to do is to read four digital inputs from the mercury switches. This can be done via a number ➤

Player 1

Player 2 \ Player 1	00	01	11	10
00	Player 1 WIN	DRAW	DRAW	Player 2 WIN
01	Player 2 WIN	Player 1 WIN	DRAW	DRAW
11	DRAW	Player 2 WIN	Player 1 WIN	DRAW
10	DRAW	DRAW	Player 2 WIN	Player 1 WIN

● *Figure I: The results matrix*

➤

of different interfaces and three types are supported in the software.

First of all you can use a User port, an increasing number of hard disc cards are having User Ports *thrown in* for free, this will require that you have a pull up resistor for each mercury switch connected to the 5 volt line.

If you have a bidirectional printer port on your model of computer you can use that but you will also need pull up resistors. Unfortunately there is not a 5 volt line on the printer port, but as there is only a small amount of current needed you can make do with connecting them to the strobe output.

Finally you can use an I²C interface, here there are internal pull up resistors so that makes the simplest system of all. Figure II shows how to wire this up for all three types of interfaces. Whenever you make a soldered joint to anything flexible you run the risk of fracturing the wire at the join between the soldered and unsoldered part of the wire. To prevent this from happening you should double the wire back on the mercury switch and rap a few turns of insulation tape round it.

Now the bulk of this project is in the software, and, like any other Body Build project I have just put the bare bones down so that you can elaborate it to suite your own needs. The heart of the program is in the array MAT% which determine which player wins – it consists of the contents of the table in Figure I. A draw is indicated by a zero value with a 1 and 2 indicating which player has won. In order to see the result you need to read the four switch inputs into a variable and use this as the subscript value to look up the array result.

However, as I said the winning and losing combinations are changed for each game. Rather than change the contents of this matrix all you need to do is invert one or more of the input bits, in effect swapping the players choice. This is quite simple to do with the exclusive OR operation. Each bit read in is either inverted or left alone by exclusive ORing it with a variable called RULES%. This is set up with a random number for each game, and has the effect of scrambling the order of the columns and rows in the results matrix.

The number of winning tugs you have to make over your opponent is set in the variable winThreshold% and this variable is used to move the *knot* in the rope to indicate who is winning. In this way the graphics don't need to be change if the threshold is changed. Initially the game is set up so that you get a tug every second, you could change this to be more or less frequent but this value seemed alright to me.

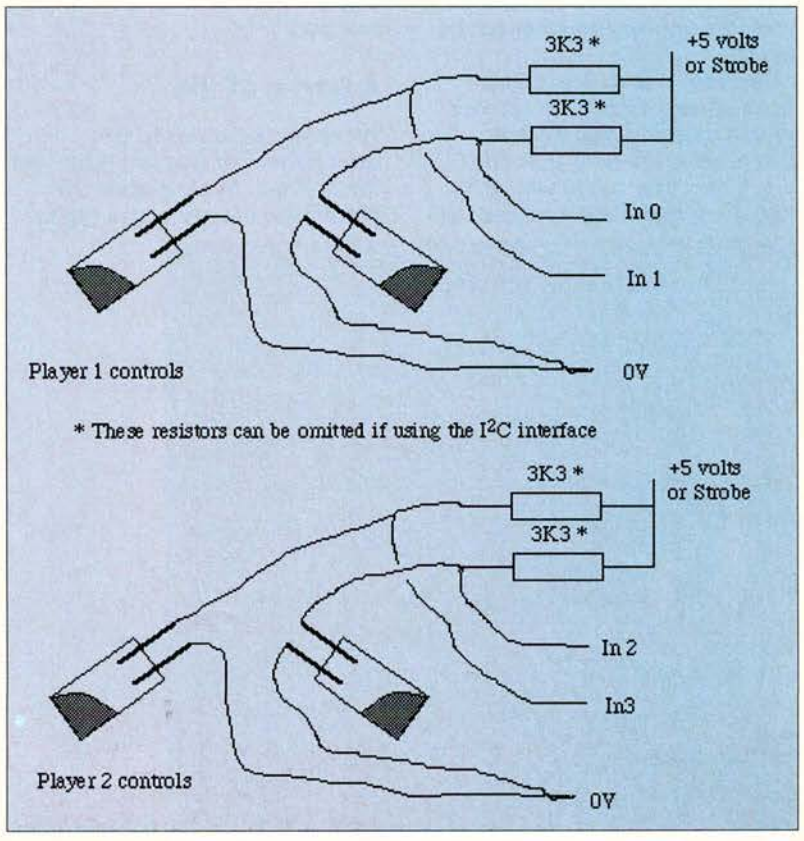
In action

Well what is it like to actually play? Trying it with my sons Alec and Graham, showed two different sorts of tactics. Alec, who understood the principals behind the game, kept one combination until he started to lose and then he changed it. Graham, on the other hand, adopted the tactics of wiggling the switches about quite frenetically. However, on several occasions Graham won so Alec switched to using Graham's tactics when he proceeded to lose again. However, I found I could beat both Alec and Graham bringing complaints of unfairness because I had designed the game.

One area of improvement you could make is to digitise a short grunt to be produced when each tug is marked. Also, there is plenty of scope for improving the graphics with little animated men tugging on the ropes. You can also experiment with different rules. For example you could change the initial matrix so that each player has two chances of winning or loosing for each combination and thus eliminating draws. You could even alter the software so that you could play the game by just holding down keys, but that would not be very *Body Build* would it?

This is a great project for beginners as the electronics is so simple, and there is also ample opportunity for experimenting with the rules of the game, so get out your soldering irons and I will see you next month.

● *Figure II: The wiring diagram*



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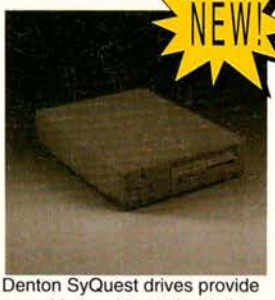

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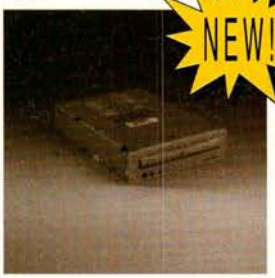

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BBC Disk

VarList: Keeping tabs on resident integers

THIS one is for the programmers out there and is intended to supplement my *Basic System Variables Lister*, published in the January 1992 issue of *The Micro User*.

When writing Basic programs which push the memory of BBC Micro and Electrons to the limit, it is often necessary to use the resident integer variables – *A%* to *Z%*.

These differ from usual integers as they are held in fixed locations in page four of memory, thus not consuming further ram. Also, their short names mean that they use the minimum number of bytes in program listings.

However, when developing programs it can be difficult to remember which have been used, and what for – particularly as the names are generally meaningless.

VarList assembles a piece of machine code which occupies about half a page, and can be used to check the contents of all *@%* to *Z%* in one quick operation – simply by typing *CALL &900* or **ResInts*.

All values are given in hexadecimal – consistent with the system variables lister – which is, in my experience, the preferred format by serious programmers. Even so, it should be obvious if values are much different than anticipated.

The routine is set to load to &900 as default – although you can of course relocate this to suit. It is quite transparent in its operation as the zero page locations used are restored on exit.

Stephen Wade

Tables: Going up to 9 x 9

THIS game gives practice in any of the multiplication tables up to the nine times in a very unusual way. When you run the program you will see nine groups of numbers. Unlikely though it may seem, every group contains a member of each of the tables 1 to 9.

Take, for example, the numbers 4, 21, 54 and 40 in the top left-hand group. 4 is a member of the 1, 2 and 4 times tables, 21 is a member of the 3 and 7 times table, 54 is a member of the 6 and 9 times table and 40 is a member of the 5 and 8 times table. Only the first nine multiples of each of the numbers 1 to 9 are needed, so the fact that 40 = 4 x 10, for example, does not count when playing this game.

Jon Millington

● *Multiplication in practice*

TextPrt: A new angle on displays

A WIDE variety of text printing routines have been published since the BBC Micro emerged some 12 years ago – and here are three more to add to your collection.

One problem programmers of graphing utilities have encountered over the years is how to display the text label for the vertical axis.

A clumsy, slow solution I have seen used several times is to display the label at the top of the screen and move it using the POINT and PLOT 69 facilities. This actually makes things more complicated and untidier than they need be.

Instead of using a single buffer during character re-definition, if two are used rotating through ninety degrees becomes quite trivial. All that is needed is a loop to move each pixel to its destination, and another to display the redefined matrix in the correct position.

This could be written in Basic, but my program uses machine code for the benefit of speed. Two variants of the routine are given: *PROCup* displays the text going up the axis, while *PROCdown* plots it coming down.

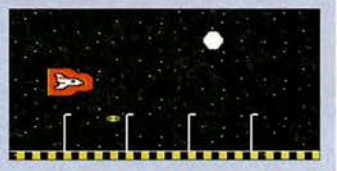
Moving away now from graph labelling, the third routine, *PROCslide*, can be used to spruce up instruction screens. It slides on a string of text, character by character, from the right hand side.

It will operate in any mode, provided lines 1290 and 1320 are changed for those with other than forty columns. It certainly grabs the attention of a user.

Pete Dawes

From the PD world

- Swat
- Fruit machine
- Slatter
- Power Raider
- Map of Britain
- Moon Landing



Grid: Getting a bit pixellated

When you run this program you will see a grid labelled A to Z underneath and 1 to 24 up the left-hand side. You can build up a picture consisting of small squares by entering a letter and a number for each. If you decide to erase a square already plotted, enter its coordinates and press any key other than Return.

Jon Millington

● *Dot by dot*

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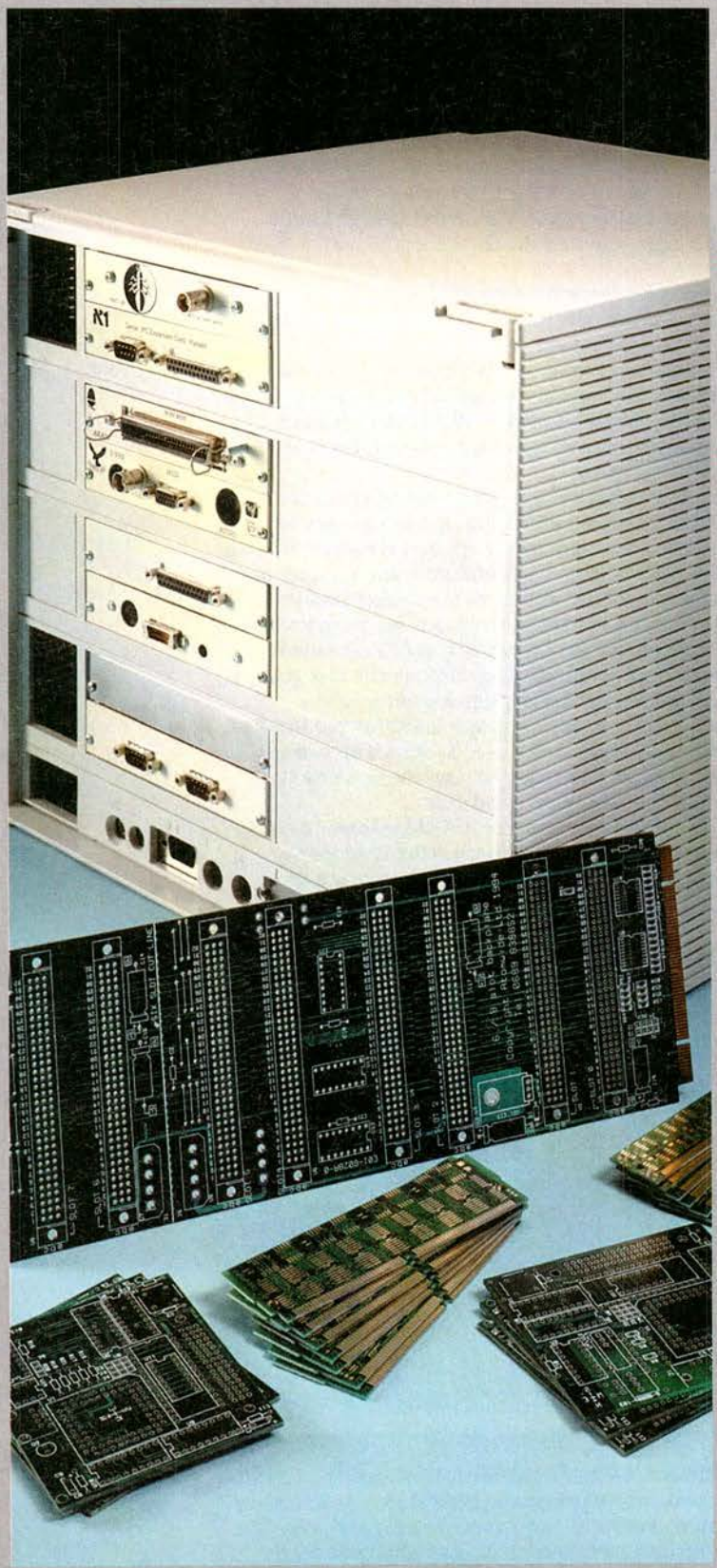

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Confused? You will be

I VISITED the Acorn World show and came away a little confused. I have an A3010 and was tempted by the PC board that Acorn was selling for £99 in the Bargain Basement. However, I was told that if this was fitted a hard disk could not be added as well.

If a hard disk is fitted to the machine's expansion slot what (if any) other devices can be added? What are user ports?

If I fitted a hard disk, which port would be suitable for partitioning for DOS and RISC OS?

A.J. Noble, Soham, Cambridgeshire

If a PC Card is added to an A3010 you can't add anything else to the standard expansion slot, but there's no point in having a PC Card unless you have a hard disk.

However, there is one solution. Atomwide produces a SCSI interface that plugs into the printer socket – but still allows you to print. From there you can add a hard disk and other SCSI devices. The DOS partition can be on any hard disk.

A User Port is another place to add external devices. It was built-in on the BBC Micro and can be added to the 32-bit machines – however, it is mostly appropriate for education and not relevant here.

Network protocol

AT ONE time there were more Econets in the UK than any other type of network. Sadly this is no longer the case. Econet was a far more modern protocol than the TCP/IP protocols that have now dominated networking. True, the transport mechanism was slow (200kb/sec) but it was very efficient and reliable when set up well – which is more than can be said for AUN.

In the last year or two we have seen the demise of all the Acorn Network newsletters which no doubt parallels the decay in Acorn networking.

Acorn was very late in bringing out AUN for the RISC OS machines and many a network came to grief trying to pull megabytes of data over a 200k line. The Broadcast Loader eventually helped – but by this time Ethernet was available.

My grandfather used to travel between his home in Brecon (mid-Wales) to Cardiff in less than an hour in the 1940s. Today with motorways, faster cars and so on it is almost possible to do the same journey in the same time. The reason for this paradox is the delays incurred in the ever increasing built-up areas and associated speed limits.

It is the same with AUN. Despite the much faster transport medium (10Mb/sec), the actual transfer speed is severely limited by the slowness of Acorn's Level 4 fileserver at the other end of NetFS in the client end. Indeed it is so slow, that for most operations – such as saving and loading small text files – Econet with SJ Research's excellent fileserver was two to three times faster. Only with large sprite files and databases does Level 4 show any advantage when compared with a vintage Z80-based processor design.

There are advantages of Ethernet of course. Using third-party packages such as Angelsoft's !APPFS or Digital Services' Netgain, it is possible to load packages across the network at speeds of 800kb/sec. This obviates the need for each station to have a local hard disk.

However, unlike Econet, Ethernet is expensive. The cheapest Ethernet card is at least £99 and a good deal more if you want it for an A3020, especially if you need peer-to-peer networking as well. Contrast this with the abundance of 16-bit NE2000 cards for the PC for under £20. Windows for Workgroups has built-in peer-to-peer capability for no extra and is usually bundled with most 486 models.

I am used to paying a premium price for Acorn products which have in the past given good value for money, but with Ethernet and the Risc PC...

Alan Davies, Head of Computing, Birkenhead School

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Robert Lytton, Leeds

For your copy, write to: R. Lytton, 7 Helmsley Drive, West Park, Leeds LS16 5HY.

Turbodriving

I READ about the problems which Peter Holliday is having when printing via a TurboDriver. I notice that no mention was made of the Impression Dongle. I have Impression II – now upgraded to Publisher – and have to include the dongle and the TurboDriver lead in the setup

➤

➤

to print satisfactorily.

With my Canon BJ200 and the Taxan Kaga dot matrix I find that the system works. It is a little bit *fragile* when switching from one printer to another, but I now only use the Taxan Kaga for *Ancestry* and provided that I do not switch from one printer to another too often in one session, I have no problems with it.

Often the problem is caused by forgetting to change the data transfer switch or, having changed the switch, forgetting to click on the appropriate printer on the iconbar.

I hope that Mr Holliday will be able to get the TurboDriver to work properly. He should be able to use the Acorn drivers as well as the TurboDriver as all printer drivers are made active on the Printer Control panel. One of them will be highlighted on the iconbar – this one will be used by the printer. To print with one of the others, click on it to highlight it. The others will then be darkened.

I am afraid that everything I have said sounds like *teaching others how to suck eggs*, but printing the figure using BubbleJet as the driver took 3 minutes 41 seconds whereas with the BJ200 as the driver it took 1 minute 18 seconds.

Geoffrey Booth, Wareham, Dorset

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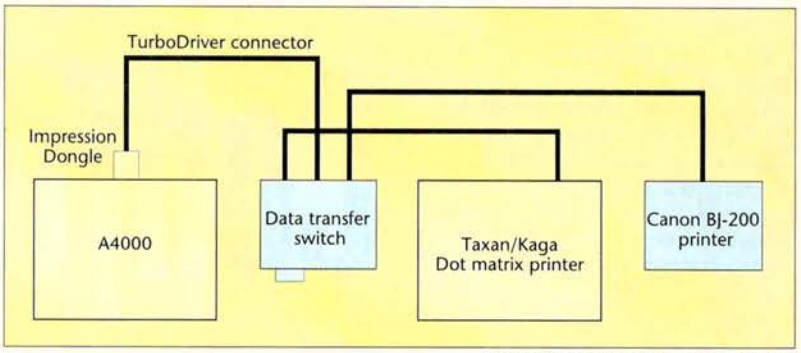

● *A4000 set up for use with dot matrix and bubble jet printers*

Not at all humble

I HAVE noticed that a lot of magazines and suppliers refer to the A3010 as *humble*, or in phrases like *it even runs at a fair speed on the A3010*. The A3000 is the basic, slowest Archimedes. I realise that it can have its main processor updated but that's the only advantage I can think of. The A3010 has the same expansion connector internally and the A3010 has faster screen handling, faster memory, faster processor, a high density drive, more flexible monitor support, a bi-directional printer port, better keyboard, better operating system, serial interface, joystick ports, better construction and reliability.

I can honestly say – as a previous owner of an A3000 – that the A3010 is a nice machine to use and works better with my VGA monitor. The A3010 is a 6 MIPS computer, the Amiga 1200 is rated at 1.42 MIPS and 486 PCs start at 9 MIPS. The current line-up of 16-bit consoles don't even get to 1 MIPS. I realise other systems have custom chips for graphics but that doesn't stop the Archimedes from emulating the same features with just a small slice of its processing power.

A3010's are now sub-£300 but just because it's cheap doesn't make it inferior. Judge it on its performance and not its price.

M.R. Wilson, Yeovil, Somerset

I AM an IT technician at a secondary school with a mix of old and new Acorn machines – including 20 Risc PCs. We have used a Turbo Driver for a Canon BJ200 which works in a similar manner to the BJ600 Turbo Driver. This worked on all our machines including the A4000 and with most but not all software until the new !Printers V1.21 were installed, after which the Turbo Driver ceased to function altogether. The only cause of action is then to revert to the earlier version of !Printers or not use the Turbo Driver.

If you decide to not use the Turbo Driver software you must replace the Turbo printer cable with a standard cable. This is because at the printer end of the Turbo printer cable there is a built-in dongle which is a hardware switch. This is a necessary evil by CC because of software piracy.

There is some software which does not function correctly with the Turbo Drivers. This is because Turbo software does not recognise some of the least commonly-used printer orientation commands to make room for its faster printing routines and as such, Turbo Drivers are not a direct replacement for the very versatile supplied !Printers.

The school no longer uses any of the CC Turbo Drivers and have reverted to the much favoured !Printers. Printing should never be a problem but a joy to see your hard work in print.

P.C. Robinson, South Ockendon, Essex

Basic printing

I WANT to print the output from a Basic program using VDU commands. The program calculates the probability associated with the value of input *k* for a Gaussian probability distribution. To run the program just click select twice on the file run and insert a value for *k* as input.The probability should then be printed out.

I have an A440 with ARM3, RISC OS 3 and 8Mb of ram, plus a SCSI 100Mb hard drive and am using Acorn's latest printer driver version 1.22. The printers are a Computer Concepts Laser and a Citizen 24-pin dot matrix.

When I had RISC OS 2 I was able to use Computer Concept's !LQ Emulate which enabled me to print output from Basic in a variety of fonts and sizes on both printers. When I changed to RISC OS 3 I found that LQ Emulate would not work – this was confirmed by Computer Concepts. Now I can get no printed output from Basic files on either printer, with or without printer drivers.

It has been suggested that RISC OS 3, through its printer manager, switches off the VDU commands. I have looked at the Programmer's Reference Manual and see that the VDU commands are disabled by the command OS Byte&03 which prevents VDU 2 printing. The manual is obscure about how to use these commands – apparently you can determine whether VDU is enabled or disabled by using OS_Byte &75 (117). However, I have not discovered how. Is my trouble due to the VDU commands switching off an OS command?

C. F. Dietrich, Camberley, Surrey

IN February 1991, you published a program by Eric Ellis called Shoplist or something similar. I used to run this on a Master 128 and printed out via a 9-pin dot matrix printer. However, times change and I am now using a Canon BJ200 BubbleJet in

Ode to a superstore

In an electrical store, which shall remain nameless
(suffice is to say that they're utterly shameless,
and the sale staff have heads which are empty and roomy,
but I can't say their names in case they sue me).
I watched the computers being put through their stuff
and couldn't help thinking they all looked quite duff.
A Compaq was nursing its faulty hard disk,
and a Packard showed off all the strong-points of CISC
by running a flight-sim, a frame every second,
but at that very instant the Manager beckoned
me over to look at his wonderful bargains
and try to confuse me to technical jargon.
"This one's equipped with a Pentium chip
that's fifty-odd mega-hertz, sixty-four bits.
Power beyond all your craziest dreams,
PCs are great, they're fantastic machines!
Sometimes, of course, they can go slightly funny,
but you know what they say: You pays your money ..."
I then made a joke about taking a RISC,
And he said, "Well, in that case, come here, look at this!
It's the latest machine from those Macintosh-makers,
Those brave pioneers, those amazing ground-breakers!
The technology's new, and so is the name."
(But despite all the changes it still smelled the same)
Feeling the strain of this tiresome waffle,
I wanted to see something not quite so awful.
What I was seeking I hadn't seen yet,
And furthermore I was willing to bet,
That this manager's actual knowledge was scant,
He left me no options: I started to rant...
"Have you got a machine with a nuttier flavour,
A British computer with a built-in screensaver
and all sorts of widgits, and plenty of speed,
which comes with a proper 3-pin plug and lead,
and doesn't need too much of my hard worked-for-cash
and a casing which won't get a dent or a bash?
A machine with a friendly and pretty UI,
and programs robust so they don't ever die.
A desktop with textures and creamy-beige icons,
and hundreds of easily-fittable add-ons.
Graphics and sound which are really sensational
and applications which *are* educational?
Something to use both at home and at work,
And with something to kill any virii which lurk."
The manager's lip drooped under his chin,
but before he could speak I butted back in:
"And don't talk all this Industry-Standardised dross,
I want a machine which *doesn't* run DOS!!!
"PowerMac runs under CISC emulation,
and Pentium's plagued with its heat dissipation.
Your prices are huge for the goods that you get,
and the thing that I seek you've not shown to me yet.
Excuse me for shouting and venting my spleen,
But I need something prettier, smaller and green."
The manager sighed, and rubbed his eyes,
consulted his book (upon which he relies
to provide him with prices and figures and facts
and back him up when his own knowledge lacks).
When at last he replies, his voice it was flat,
I'm sorry to say we've got nothing like that."

Epilogue
And if that didn't make me flip my lid,
For a pair of naff earphones, he charged me ten quid

Colin McEwan,
Dunbartonshire, Scotland

Colin is thinking of getting together an anthology of computer-related poetry, If you're interested you can contact him at: 11 Helen Way, Bonhill, Dunbartonshire, Strathclyde, G83 9PJ.

conjunction with a Risc PC.

The original listing uses VDU printer codes which do not work with the BJ200. As it stands the program runs OK with the exception of not printing out the selected items or the master list. Could you suggest an alternative method of printing from this program? The master lists prints in condensed type whereas the selection prints in NLQ. I still have the dot matrix printer but alas I don't have the drivers.

W. Cummings, Chingford, London

In both cases the most practical solution is to modify the programs to treat the printer as a file, like this:

```
Z%=OPENIN"printer:"
BPUT#Z%,"Hello world"
CLOSE#Z%
```

This creates a file-like channel to the printer – whichever one is currently set-up – and allows you to print to it by sending the characters. Notice the use of BPUT# which has been extended to allow strings to be output.

So, in the case of each of these programs, you need to open the channel, then wherever you have a print statement replace it with a BPUT# – any number variables to be printed must be converted to strings – and close the channel at the end.

Commands to change the font settings of the printer can be issued to – where you might have VDU27,4, you would use:

```
BPUT#Z%,27:BPUT#Z%,4
```

If the OPENIN command returns zero it means that some other program has currently claimed the printer. As a matter of interest, you can do the same trick with "serial:" which claims the serial port and other devices.

Sprite unknown

I USED to own an A440/1 which was fitted with a Computer Concept's ColourCard and using a Watford Electronics hand scanner I built up a useful collection of sprites.

Now that I own a Risc PC the most recent sprites saved – possible since fitting the ColourCard, I'm not sure – will not load. Attempting to drop them on to !Paint produces a blank viewer and double-click produced the error message *sprite stored in an unrecognised mode.* Is there any way to recover these files?

Malcolm H. Brooke, Sir John Mogg School, BPFO

The ColourCard uses a set of unique mode numbers which, as you discovered, are not recognised unless the ColourCard is installed. In a fax from Computer Concepts some time ago we received the following information:

The easiest way to change sprites saved in ColourCard 15bpp screen modes (e.g. 105/106/107) is to use something like !Zap to change the sprite's mode word (offset &34). For example, the mode word may be &00000066 (102) change it to &281680B5 which defines it as a 15bpp Acorn sprite.

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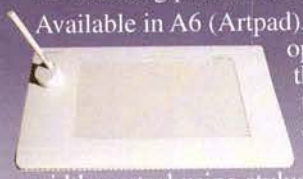
£125 +VAT

Graphics Tablets



The amazing pressure sensitive Wacom Tablet from EESOX. Available in A6 (Artpad), A5, A4, & A3 sizes. Cordless pen operation can completely replace all the mouse functions. Any of the above tablets can be supplied with our Studio24 painting package, which incorporates both opacity and line width control using stylus pressure, at a combined price £80.00 more than those shown below.

A6 £159.00 A5 £399.00 A4 £549.00 A3 £799.00

Acorn Computers

We are fully authorised Acorn dealers and we can supply all Acorn computers and upgrades at very competitive prices usually by return of post. All Acorn computers are supplied with free membership of the Virus Protection Scheme and a special offer on our Studio24 painting package of just £80.00 + vat.

Please 'phone for more information and details of special computer package deals which may be available. If you are undecided as to what hardware you really need then we can provide professional advice and assistance to help you choose the right system for you.

Pineapple Software Virus Protection Scheme

The Pineapple Software Virus Protection Scheme provides the most comprehensive protection available against computer viruses. !Killer together with VProtect will detect and remove all of the currently known 66 families of virus (over 100 viruses in total). Because new viruses are being discovered all the time our virus protection scheme will provide you with 3-4 updates of the software each year. We can also offer immediate advice by 'phone. !Killer can scan any filing system or device including floppies, harddiscs, networks, even CDRoms. All types of compressed file can also be scanned. All infected files are fully restored without having to reload from master discs or backups.

Don't wait until you discover you have a virus! Use the software that Acorn themselves use to check for viruses.

A years subscription costs just £24.00 + vat

Low cost school and county licences available

A4 Colour Scanner

New from Pineapple the superb IX-4015 A4 flatbed Canon colour scanner. Supplied with Imagemaster and Twain software this scanner makes the perfect companion for our Studio24 re-touching software. With a basic resolution of 400 x 800 dpi this scanner is unbeatable value.

IX4015 with Imagemaster & Twain	**£599.00**
As above + Studio24	**£679.00**
SCSI interface + cable	**'phone**

Colour Printers - Canon & Epson

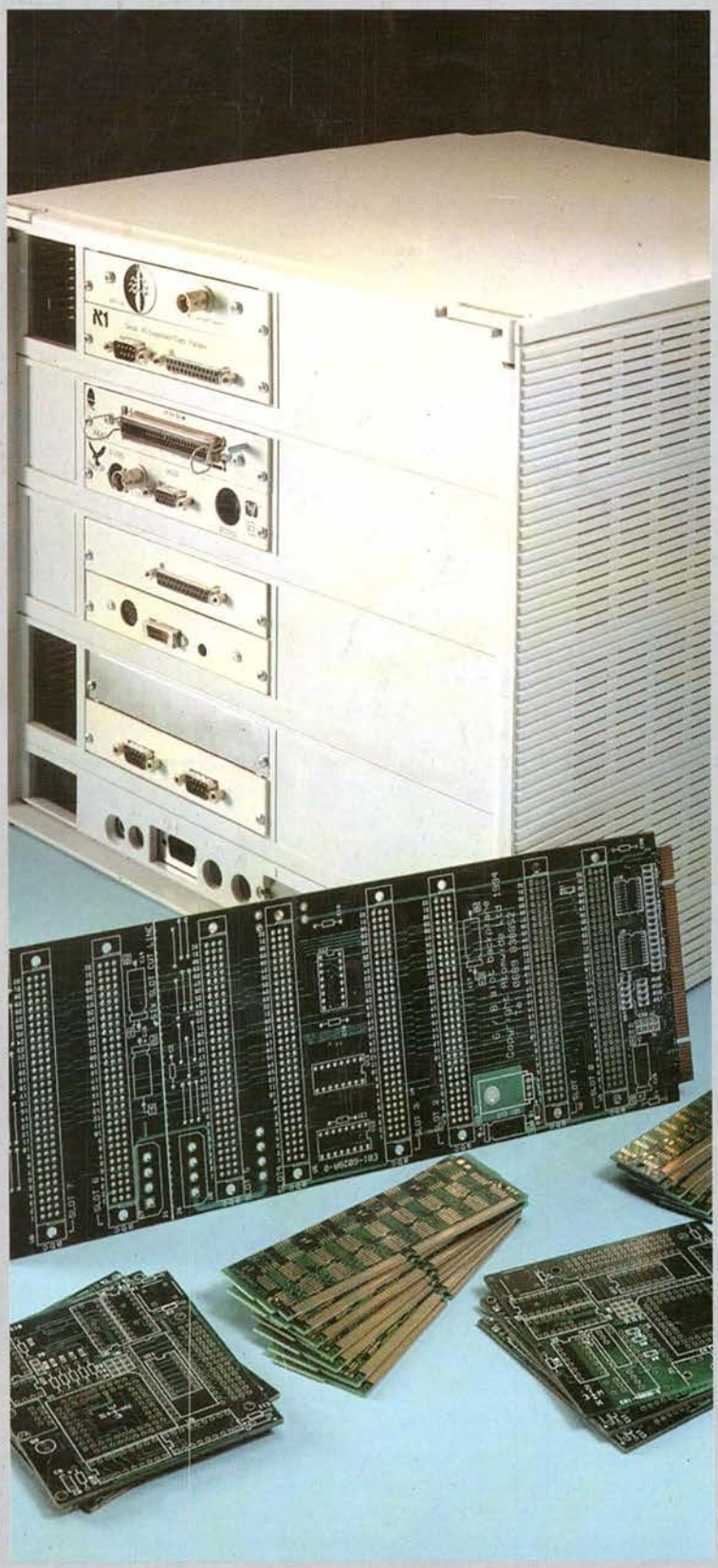
Due to bulk purchase we can offer the BJC600 colour printer at the lowest ever prices. Also to be recommended is the Epson Stylus Colour. We also offer our Studio24 painting package when purchased at the same time as a printer at a reduced price of just £80.00 + vat.

Terms:- Please add 17.5%vat. Carriage FREE to mainland U.K. Phone for quote outside U.K. Official orders, cheques and all major credit cards accepted. Money back guarantee on all products.

Pineapple Software
39, Brownlea Gardens
Seven Kings
Ilford, Essex
IG3 9NL

Telephone Hot Line service on all products
Tel 0181 599 1476 Fax 0181 598 2343

The Complete Solution



Acorn Risc PC600
If you are looking to improve the performance of your new PC600 machine or are considering replacing your existing Acorn file server with a new RiscPC machine, Atomwide can help you build a system that ideally suits your needs.

Networking
Atomwide can supply everything from one ANT Ethernet interface right up to a complete network installation. If you are planning a network installation then contact one of our staff for support and advice.

10base2	£110.00	(£129.25inc)
10baseT	£110.00	(£129.25inc)

ANT Ethernet cards are available for every type of Acorn machine, with a range of client ROMs (eg. Acorn Access).

Backplane upgrade kits
All kits come complete with a 2nd PSU, 8 slot backplane, cables, the relevant number of case slices and detailed fitting instructions.

2 slot to 8 slot	POA
4 slot to 8 slot	POA

Acorn Risc PC600 memory
All Atomwide memory upgrades comply with Acorn's recommended chip counts and specifications. Please phone for details of exchange prices on memory SIMMs.

SIMMs

4Mb	£120.00	(£141.00inc)
8Mb	£220.00	(£258.50inc)
16Mb	£499.00	(£586.33inc)
32Mb	£999.00	(£1173.83inc)
Larger SIMMs	POA	

VRAM

1Mb	£99.00	(£116.33inc)
2Mb	£180.00	(£211.50inc)
1-2Mb	£85.00	(£99.87inc)

Acorn Risc PC600 machines
Custom built and standard systems are available with and without the standard Acorn monitors. Please phone for a competitive price on your system.

All PC600s bought from Atomwide are supplied with an extra 1Mb of VRAM free.

ATOMWIDE

7, The Metro Centre, Bridge Road,
Orpington, Kent, BR5 2BE.
Tel 0689 838852 Fax 0689 896088
Email: sales@atomwide.co.uk

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